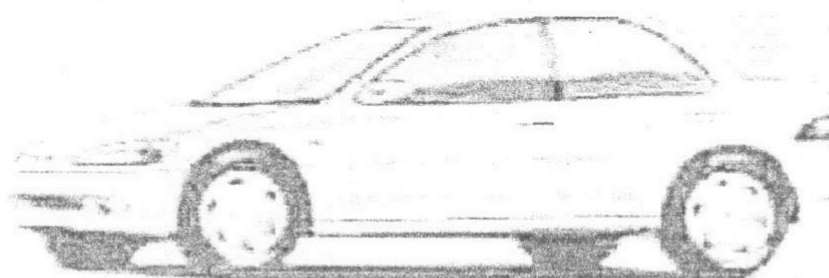


SERVICE MANUAL



SUBARU IMPREZA



Service manual

General information

1. 4-door Sedan

A: DIMENSIONS

Model			1600		1800	2000 Non TURBO		2000 TURBO
			FWD	AWD	AWD	FWD	AWD	AWD
Overall length		mm (in)	4,350 (171.3), 4,375 (172.2)* ¹					4,340 (170.9)
Overall width		mm (in)	1,690 (66.5)					
Overall height (at CW)		mm (in)	1,400 (55.1)* ² , 1,405 (55.3) 1,415 (55.7)* ³	1,415 (55.7)	1,415 (55.7)	1,415 (55.7)	1,415 (55.7)	1,400 (55.1)
Compartment	Length	mm (in)	1,820 (71.7)					
	Width	mm (in)	1,385 (54.5)					
	Height	mm (in)	1,170 (46.1)					
Wheelbase		mm (in)	2,520 (99.2)					
Tread	Front	mm (in)	1,475 (58.1)* ² 1,465 (57.7) 1,460 (57.5)* ³	1,460 (57.5)	1,460 (57.5)	1,460 (57.5)	1,460 (57.5)	1,465 (57.7)
	Rear	mm (in)	1,465 (57.7)* ² 1,455 (57.3) 1,450 (57.1)* ³	1,455 (57.3)	1,455 (57.3)	1,455 (57.3) 1,450 (57.1)* ³	1,455 (57.3)	1,455 (57.3)
Minimum road clearance		mm (in)	150 (5.9)	160 (6.3)	160 (6.3)	145 (5.7) 155 (6.1)* ³	145 (5.7) 155 (6.1)* ³	150 (5.9)

*¹ : G.C.C. Countries*² : with 13 inch wheel*³ : Australian model

B: ENGINE

Model — With catalyst vehicles —		1600	1800	2000 Non TURBO	2000 TURBO
Engine type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine			
Valve arrangement		Overhead camshaft type			
Bore x Stroke		mm (in)	87.9 x 65.8 (3.461 x 2.591)	87.9 x 75 (3.461 x 2.95)	92 x 75 (3.62 x 2.95)
Displacement		cm ³ (cu in)	1,597 (97.45)	1,820 (111.06)	1,994 (121.67)
Compression ratio		9.7			8.0
Firing order		1 — 3 — 2 — 4			
Idle speed at Park/Neutral position		rpm	700 ± 100		800 ± 100
Maximum output		kW (PS)/rpm	66 (90)/5,600	79 (107)/5,600	85 (115)/5,600 155 (211)/5,600
Maximum torque		N.m (kg-m, ft-lb)/rpm	137 (14.0, 101)/ 4,000	157 (16.0, 115)/ 4,000	172 (17.6, 127)/ 4,000 290 (29.6, 213)/ 4,000

Model — Without catalyst vehicles —		1600	1800
Engine type		Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine	
Valve arrangement		Overhead camshaft type	
Bore x Stroke		mm (in)	87.9 x 65.8 (3.461 x 2.591) 87.9 x 75 (3.461 x 2.95)
Displacement		cm ³ (cu in)	1,597 (97.45) 1,820 (111.06)
Compression ratio		9.7	
Firing order		1 — 3 — 2 — 4	
Idle speed at Park/Neutral position		rpm	700 ± 100
Maximum output		kW (PS)/rpm	70 (95)/5,600 79 (107)/5,600
Maximum torque		N.m (kg-m, ft-lb)/rpm	137 (14.0, 101)/4,000 157 (16.0, 115)/4,000

Model — Australia spec. vehicles —	1600	2000 Non TURBO	2000 TURBO
Engine type	Horizontally opposed, liquid cooled, 4-cylinder, 4-stroke gasoline engine		
Valve arrangement	Overhead camshaft type		
Bore x Stroke mm (in)	87.9 x 65.8 (3.461 x 2.591)	92 x 75 (3.62 x 2.95)	
Displacement cm ³ (cu in)	1,597 (97.45)	1,994 (121.67)	
Compression ratio	9.7		8.0
Firing order	1 — 3 — 2 — 4		
Idle speed at Park/Neutral position rpm	700 ± 100	800 ± 100	
Maximum output kW (PS)/rpm	70 (95)/5,600	88 (120)/5,600	155 (211)/5,600
Maximum torque N.m (kg-m, ft-lb)/rpm	137 (14.0, 101)/4,000	175 (17.9, 129)/4,000	290 (29.6, 214)/4,000

C: ELECTRICAL

Model	1600	1800	2000 Non TURBO	2000 TURBO
Ignition timing at idling speed BTDC/rpm	5° ± 10°/700	10° ± 10°/700	20° ± 10°/800 (MT), 15° ± 10°/800 (AT)	12° ± 10°/800
Spark plug	Type and manufacturer NGK: BKR6E (without catalyst) NGK: BKR6E-11 (with catalyst) CHAMPION: RC8YC4 (with catalyst)		NGK: BKR6E (without catalyst) NGK: EKR6E-11 (with catalyst) CHAMPION: RC10YC4 (with catalyst)	NGK: PFR6B
Generator	12V — 75A			
Battery	Type and capacity (5HR)	For Europe	5MT: 12V — 48AH 4AT: 12V — 52AH	
		Others	5MT: 12V — 27AH 4AT: 12V — 40AH	

D: TRANSMISSION

Model			1600		2000	
			FWD			
Transmission type			5MT*1	4AT*1	5MT*1	4AT*1
Clutch type			DSPD	TCC	DSPD	TCC
Gear ratio	1st		3.545	2.785	3.545	2.785
	2nd		2.111	1.545	2.111	1.545
	3rd		1.448	1.000	1.448	1.000
	4th		1.088	0.694	1.088	0.694
	5th		0.825	—	0.871	—
	Reverse		3.416	2.272	3.416	2.272
Reduction gear (Front drive)	1st reduction	Type of gear	—	Helical	—	Helical
		Gear ratio	—	1.000	—	1.000
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	4.444	3.700	4.111

5MT*1: 5-forward speeds with synchromesh and 1-reverse

4AT*1: Electronically controlled fully-automatic, 4-forward speeds and 1-reverse

DSPD: Dry Single Plate Diaphragm

TCC: Torque Converter Clutch

SPECIFICATIONS

Model			1600	1800	
			AWD		
Transmission type			5MT*2	5MT*2	4AT*2
Clutch type			DSPD	DSPD	TCC
Gear ratio	1st		3.545	3.545	2.785
	2nd		2.111	2.111	1.545
	3rd		1.448	1.448	1.000
	4th		1.088	1.088	0.694
	5th		0.825	0.825	—
	Reverse		3.416	3.416	2.272
Auxiliary transmission gear ratio		High	—	—	—
		Low	—	—	—
Reduction gear (Front drive)	1st reduction	Type of gear	—	—	Helical
		Gear ratio	—	—	1.000
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	3.900	4.111
Reduction gear (Rear drive)	Transfer reduction	Type of gear	Helical	Helical	—
		Gear ratio	1.000	1.000	—
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	3.900	4.111

Model			2000 Non TURBO		2000 TURBO	
			AWD			
Transmission type			5MT*2	4AT*2	5MT*2	4AT*2
Clutch type			DSPD	TCC	DSPD	TCC
Gear ratio	1st		3.545	2.785	3.454	2.785
		2nd	2.111	1.545	1.947	1.545
		3rd	1.448	1.000	1.366	1.000
		4th	1.088	0.694	0.972	0.694
		5th	0.871	—	0.738	—
		Reverse	3.416	2.272	3.416	2.272
Auxiliary transmission gear ratio	High	—	—	—	—	
	Low	—	—	—	—	
Reduction gear (Front drive)	1st reduction	Type of gear	—	Helical	—	Helical
		Gear ratio	—	1.000	—	1.000
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	4.111	3.900	4.111
Reduction gear (Rear drive)	Transfer reduction	Type of gear	Helical	—	Helical	—
		Gear ratio	1.000	—	1.100	—
	Final reduction	Type of gear	Hypoid	Hypoid	Hypoid	Hypoid
		Gear ratio	3.900	4.111	3.545	4.111

5MT*2: 5-forward speeds with synchromesh and 1-reverse – with center differential and viscous coupling

4AT*2: Electronically controlled fully-automatic, 4-forward speeds and 1-reverse – with hydraulically controlled transfer clutch

DSPD: Dry Single Plate Diaphragm

TCC: Torque Converter Clutch

E: STEERING

Model	Non TURBO	TURBO	
		RHD	LHD
Type	Rack and Pinion		
Turns, lock to lock	3.2	2.8	3.0
Minimum turning circle	m (ft)	Curb to curb: 10.2 (33.5)	Curb to curb: 10.4 (34.1)
			Curb to curb: 10.8 (35.4)

F: SUSPENSION

Front	Macpherson strut type, Independent, Coil spring
Rear	Dual link strut type, Independent, Coil spring

G: BRAKE

Model	Non TURBO	TURBO
Service brake system	Dual circuit hydraulic with vacuum suspended power unit	
Front	Ventilated disc brake	
Rear	Drum brake	Disc brake
Parking brake	Mechanical on rear brakes	

H: TIRE

Model	Non TURBO			TURBO
Rim size	13 x 5.00B	14 x 5-1/2JJ	15 x 6JJ	15 x 6JJ
Tire size	165R13	175/70R14	185/70R14	195/60R15
Type	Steel belted radial, Tubeless			

I: CAPACITY

Model			Non TURBO				TURBO	
			FWD		AWD			
			5MT	4AT	5MT	4AT	5MT	4AT
Fuel tank ℓ (US gal, Imp gal)			50 (13.2, 11.0)				60 (15.9, 13.2)	
Engine oil	Upper level	ℓ (US qt, Imp qt)	4.0 (4.2, 3.5)				4.5 (4.8, 4.0)	
	Lower level	ℓ (US qt, Imp qt)	3.0 (3.2, 2.6)				3.5 (3.7, 3.1)	
Transmission gear oil ℓ (US qt, Imp qt)			3.3 (3.5, 2.9)	—	3.5 (3.7, 3.1)	—	4.0 (4.2, 3.5)	—
Automatic transmission fluid ℓ (US qt, Imp qt)			—	7.9 (8.4, 7.0)	—	7.9 (8.4, 7.0)	—	9.5 (10.0, 8.4)
AT differential gear oil ℓ (US qt, Imp qt)			—	1.2 (1.3, 1.1)	—	1.2 (1.3, 1.1)	—	1.2 (1.3, 1.1)
AWD rear differential gear oil ℓ (US qt, Imp qt)			—		0.8 (0.8, 0.6)			
Power steering fluid ℓ (US qt, Imp qt)			0.7 (0.7, 0.6)					
Engine coolant ℓ (US qt, Imp qt)			1600: 6.4 (6.8, 5.6), 1800: 6.2 (6.6, 5.5), 2000: 6.0 (6.3, 5.2)				7.2 (7.6, 6.3)	

J: WEIGHT

1. EUROPE, GENERAL SPEC. VEHICLE

Model			1600						1800	
			FWD				AWD		AWD	
			LX		GL		LX	GL	GL	
			5MT	4AT	5MT	4AT	5MT	5MT	5MT	4AT
Curb weight (C.W.)	Front	kg (lb)	615 (1,355)	660 (1,455)	625 (1,380)	670 (1,475)	645 (1,420)	650 (1,435)	655 (1,445)	685 (1,510)
	Rear	kg (lb)	410 (905)	415 (915)	425 (935)	430 (950)	470 (1,035)	475 (1,045)	475 (1,045)	480 (1,060)
	Total	kg (lb)	1,025 (2,260)	1,075 (2,370)	1,050 (2,315)	1,100 (2,425)	1,115 (2,460)	1,125 (2,480)	1,130 (2,490)	1,165 (2,570)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	790 (1,750)	830 (1,830)	810 (1,785)	850 (1,875)	810 (1,785)	830 (1,830)	840 (1,850)	860 (1,895)
	Rear	kg (lb)	760 (1,675)	790 (1,740)	770 (1,700)	800 (1,765)	830 (1,830)	840 (1,850)	840 (1,850)	840 (1,850)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,520 (3,350)	1,590 (3,505)	1,580 (3,485)	1,640 (3,615)	1,620 (3,570)	1,640 (3,615)	1,680 (3,705)	1,680 (3,705)

Model			2000 Non TURBO						2000 TURBO
			FWD		AWD				AWD
			GL		GL		RX		TURBO
			5MT	4AT	5MT	4AT	5MT	4AT	5MT
Curb weight (C.W.)	Front	kg (lb)	640 (1,410)	680 (1,500)	660 (1,455)	690 (1,520)	660 (1,455)	690 (1,520)	725 (1,600)
	Rear	kg (lb)	425 (935)	430 (950)	475 (1,045)	480 (1,060)	475 (1,045)	480 (1,060)	510 (1,125)
	Total	kg (lb)	1,065 (2,350)	1,110 (2,450)	1,135 (2,505)	1,170 (2,580)	1,135 (2,505)	1,170 (2,580)	1,235 (2,725)
Maximum permissible axle weight (M.P.A.W.)	Front	kg (lb)	810 (1,785)	850 (1,875)	840 (1,850)	860 (1,895)	840 (1,850)	860 (1,895)	900 (1,985)
	Rear	kg (lb)	770 (1,700)	800 (1,765)	840 (1,850)	840 (1,850)	840 (1,850)	840 (1,850)	850 (1,875)
Maximum permissible weight (M.P.W.)	Total	kg (lb)	1,580 (3,485)	1,640 (3,615)	1,680 (3,705)	1,680 (3,705)	1,680 (3,705)	1,680 (3,705)	1,750 (3,860)

NOTE:

When any of the following optional parts are installed, add the weight to the curb weight.

Weight of optional parts	Power window	Power door lock	ABS			Air conditioning	Sun roof	Without power steering	SRS Airbag (Driver)	SRS Air bag (Driver & Passenger)
			13 in*	14 in	15 in					
Front kg (lb)	1 (2)	0 (0)	13 (29)	8 (18)	7 (15)	19 (42)	5 (11)	-8 (-18)	5 (11)	11 (24)
Rear kg (lb)	2 (4)	1 (2)	6 (13)	4 (9)	1 (2)	-2 (-4)	8 (18)	1 (2)	1 (2)	2 (4)
Total kg (lb)	3 (7)	1 (2)	19 (42)	12 (26)	8 (18)	17 (37)	13 (29)	-7 (-15)	6 (12)	13 (29)

*: In case that the ABS is installed on 13 in.-wheel equipped vehicles, the wheels and brakes must be exchanged for 14 in. ones.

1. General Precautions

A: BEFORE STARTING SERVICE

- 1) Be sure to perform the jobs listed in the Periodic Maintenance Schedule.
- 2) When a vehicle is brought in for maintenance, carefully listen to the owner's explanations of the symptoms exhibited by the vehicle. List the problems in your notebook, and refer to them when trying to diagnose the trouble.
- 3) All jewelry should be removed. Suitable work clothes should be worn.
- 4) Be sure to wear goggles.
- 5) Use fender, floor and seat covers to prevent the vehicle from being scratched or damaged.
- 6) Never smoke while working.
- 7) Before removing underfloor bolts (including the rear differential filler plug) coated with bituminous wax, remove old wax. Re-coat with new wax after reinstallation.

B: WHILE WORKING

- 1) When jacking up the vehicle, be sure to use safety stands.
- 2) When jacking up the front or rear end of the car body, be sure to chock the tires remaining in contact with the ground.
- 3) Keep the parking brake applied when working on the vehicle. Chock the tires remaining in contact with the ground (and set the selector lever to "P" position in AT vehicle), when the parking brake cannot be applied, such as when the brakes are being worked on.
- 4) Keep the ignition key turned "OFF" if at all possible.
- 5) Be cautious while working when the ignition key is "ON"; if the engine is hot, the cooling fan may start to operate.
- 6) While the engine is in operation, properly ventilate the workshop.
- 7) While the engine is in operation, be aware of any moving parts, such as the cooling fan and the drive belt.
- 8) Keep your hands off any metal parts such as the radiator, exhaust manifold, exhaust pipe, and muffler to prevent burning yourself.
- 9) When servicing the electrical system or the fuel system, disconnect the ground cable from the battery.
- 10) When disassembling, arrange the parts in

the order that they were disassembled.

- 11) When removing a wiring connector, do not pull the wire but pull the connector itself.
- 12) When removing a hose or tube, remove the clip first. Then, pull the hose or tube while holding its end fitting.
- 13) Replace gaskets, O-rings, snap rings, lock washers, etc. with new ones.
- 14) When tightening a bolt or nut, tighten it to the specified torque.
- 15) When performing work requiring special tools, be sure to use the designated ones.
- 16) After completing work, make certain that the hoses, tubes and wiring harnesses are securely connected.
- 17) After completing work, be sure to wash the vehicle.

C: TREATMENT FOR USED ENGINE OIL

1. ENGINE OILS

Prolonged and repeated contact with mineral oil will result in the removal of natural fats from the skin, leading to dryness, irritation and dermatitis. In addition, used engine oil contains potentially harmful contaminants which may cause skin cancer. Adequate means of skin protection and washing facilities should be provided.

2. HEALTH PROTECTION PRECAUTIONS

- 1) Avoid prolonged and repeated contact with oils, particularly used engine oils.
- 2) Wear protective clothing, including impervious gloves where practicable.
- 3) Do not put oily rags in pockets.
- 4) Avoid contaminating clothes, particularly underpants, with oil.
- 5) Overalls must be cleaned regularly. Discard unwashable clothing and oil impregnated footwear.
- 6) First aid treatment should be obtained immediately for open cuts and wounds.
- 7) Use barrier creams, applying them before each work period, to help the removal of oil from the skin.
- 8) Wash with soap and water to ensure all oil is removed (skin cleansers and nail brushes will help). Preparations containing lanolin replace the natural skin oils which have been removed.
- 9) Do not use petrol, kerosene, diesel fuel, gas oil, thinners or solvents for washing skin.

10) If skin disorders develop, obtain medical advice.

11) Where practicable, degrease components prior to handling.

12) Where there is a risk of eye contact, eye protection should be worn, for example, chemical goggles or face shields; in addition an eye wash facility should be provided.

3. ENVIRONMENTAL PROTECTION PRECAUTIONS

It is illegal to pour used oil on to the ground, down sewers or drains, or into water courses. The burning of used engine oil in small space heaters or boilers is not recommended unless emission control equipment is fitted. If in doubt, check with the Local Authority.

Dispose of used oil through authorized waste disposal contractors, licensed waste disposal sites, or to the waste oil reclamation trade. If in doubt, contact the Local Authority for advice on disposal facilities.

D: HANDLING AN AT VEHICLE

1) The engine cannot be started by pushing the vehicle, and also the vehicle cannot be moved by operating the starter motor.

2) Be sure to release the accelerator pedal before shifting from the "R" to the "N" range and from the "N" to the "D" range, or vice versa even when the vehicle is stopped.

3) Do not maintain the vehicle in a stall operation for more than five seconds as this may over-heat the clutch excessively.

4) When the speedometer malfunctions, a vehicle-speed signal will no longer be emitted. Immediately have it repaired.

5) Use only genuine SUBARU AT fluid in the transmission.

E: FULL-TIME AWD MT MODELS

1. SPEEDOMETER TEST (Jack-up method)

1) Position vehicle so that front wheels are placed between rollers of speedometer test machine.

2) Jack up vehicle until rear wheels clear the floor, and support with safety stands.

3) Start engine with shift lever set in 2nd gear (for safety considerations). Perform speedometer tests.

WARNING:

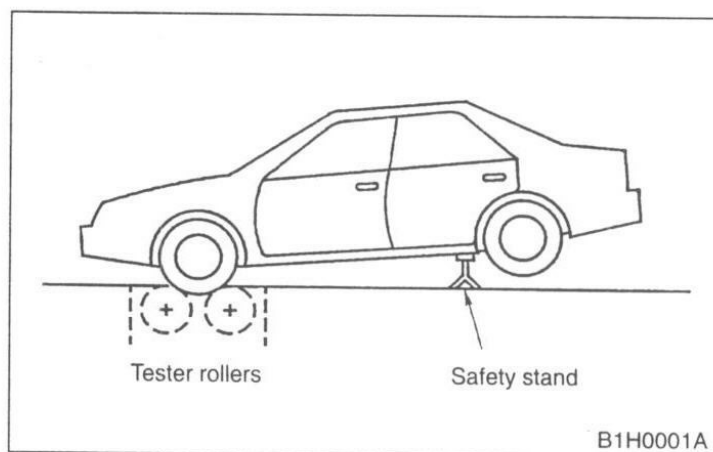
- Secure a rope or wire to the front towing hook to prevent the lateral runout of front wheels.

- Do not abruptly depress/release clutch pedal or accelerator pedal during tests even when engine is operating at low speeds since this may cause vehicle to jump off test machine.

- Avoid abrupt braking after tests.

- In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.

- Since the rear wheels will also be rotating, do not place anything near them. Also, make sure that nobody goes in front of the vehicle.



2. SPEEDOMETER TEST (Free roller method)

1) Position vehicle so that front wheels are placed between rollers of test machine.

2) Scribe alignment mark corresponding with centerline of rear wheels on floor.

3) Back up vehicle so that centerline of free rollers are aligned with mark scribed in step 2 above.

4) Drive vehicle onto free rollers.

5) Perform speedometer tests.

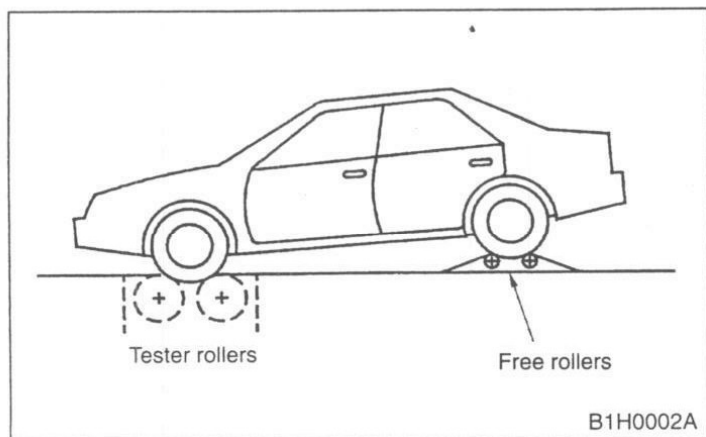
WARNING:

- Secure a rope or wire to the front towing hook to prevent the lateral runout of front wheels

- Do not abruptly depress/release clutch pedal or accelerator pedal during tests even when engine is operating at low speeds

since this may cause vehicle to jump off test machine.

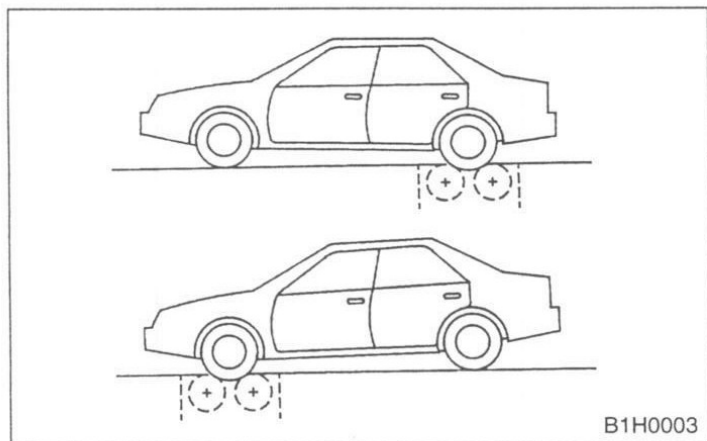
- Avoid abrupt braking after tests.



3. BRAKE TEST

- 1) Drive vehicle for a distance of several kilometers (miles) to stabilize dragging force of viscous coupling.
- 2) Place vehicle onto brake tester.
- 3) Perform brake tests.

Effect of braking force on viscous coupling torque: Approx. 245 N (25 kg, 55 lb)



NOTE:

If dragging force exceeds specifications, check brake pad or brake shoe for dragging. Abnormalities related to the viscous torque of viscous coupling unit may cause excessive dragging force. At this point, raise vehicle so that two front or rear wheels clear floor, remove cause of abnormality and check wheel rotation.

4. CHASSIS DYNAMOMETER TEST

- 1) Locate vehicle onto chassis dynamometer tester.
- 2) Locate rear wheels onto free rollers.
- 3) Perform dynamic performance tests.

WARNING:

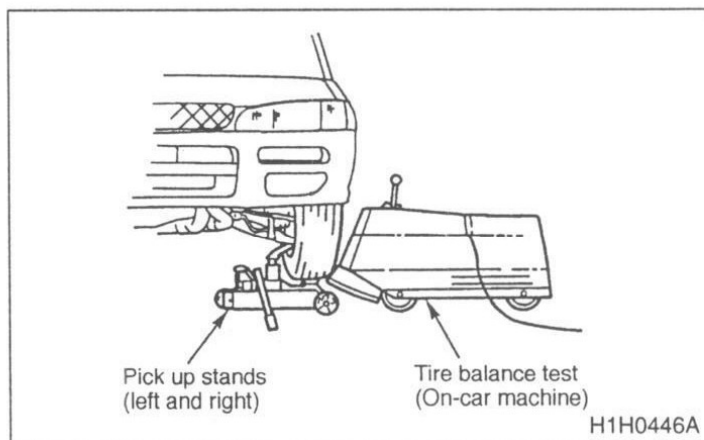
- Do not abruptly depress/release clutch pedal or accelerator pedal during tests.
- Avoid abrupt braking tests after tests.

5. TIRE BALANCE TEST (ON-car machine)

- 1) Raise vehicle so that left and right wheels to be checked clear the floor. Support wheels using pick-up stands.
- 2) Raise the other two wheels off the ground and support with a safety stand.
- 3) Attach on-car machine to wheels to be checked.
- 4) Drive wheel with engine and perform tire balance tests.

CAUTION:

- Perform tire balance tests after each tire balance has been measured.
- Locate the vehicle so that its front and rear sides are equal in height.
- Release parking brake.
- Manually rotate each tire and check for drag.
- Do not operate clutch and do not accelerate the engine abruptly.
- If error occurs due to engine operation, do not operate balance's motor.

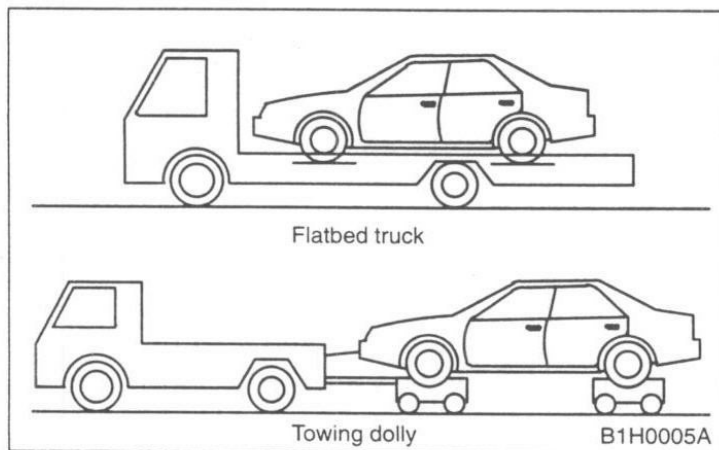


6. TOWING

1) Loading vehicle onto dolly or flat-bed truck

CAUTION:

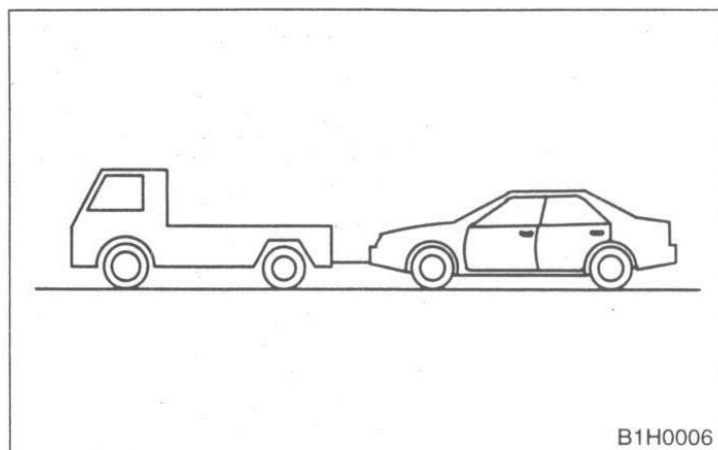
- Transport vehicle using a dolly or flat-bed truck whenever possible.
- Move shift lever to "1st" position and apply parking brake.
- When you unload a vehicle from a flat-bed truck, do as follows:
 - run the engine of the unloaded vehicle,
 - shift into reverse gear when unloading the vehicle as it faces the same direction as that in which the truck travels,
 - shift into 1st gear when unloading the vehicle as it faces the opposite direction to that in which the truck travels.



2) Towing with a rope

CAUTION:

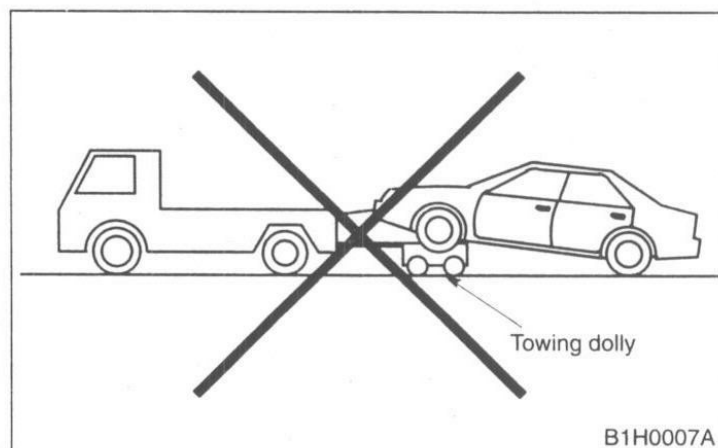
- Use a rope only when power train and all wheels are operating properly.
- The ignition switch should be in the "ACC" position. Never have the ignition switch on "LOCK" while the vehicle is being towed because steering will not be possible, since the direction of the wheels will be locked.
- Put the transmission in neutral.
- Never use the tie down hooks for towing.
- Remember that brake booster and power steering will not work when engine is "OFF". You will have to use greater effort for the brake pedal and steering wheel.
- Before towing, check transmission oil and differential oil levels and top up to the specified level if necessary.



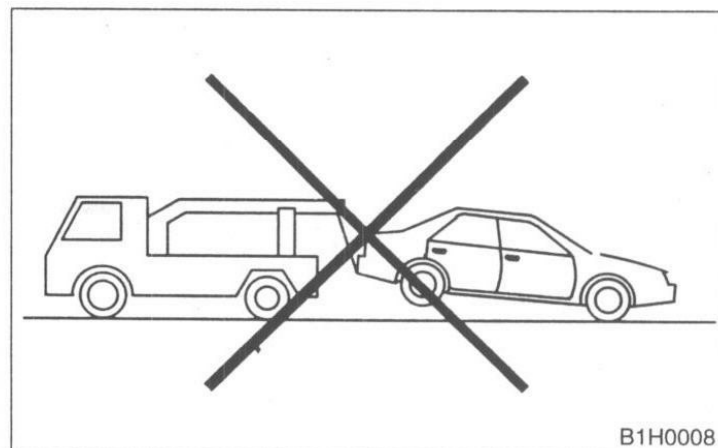
3) Towing with front or rear wheels raised

CAUTION:

- Do not tow vehicle with only front or rear wheels placed on towing dolly or flat-bed truck. This may degrade viscous coupling performance or cause vehicle to jump off dolly or truck.

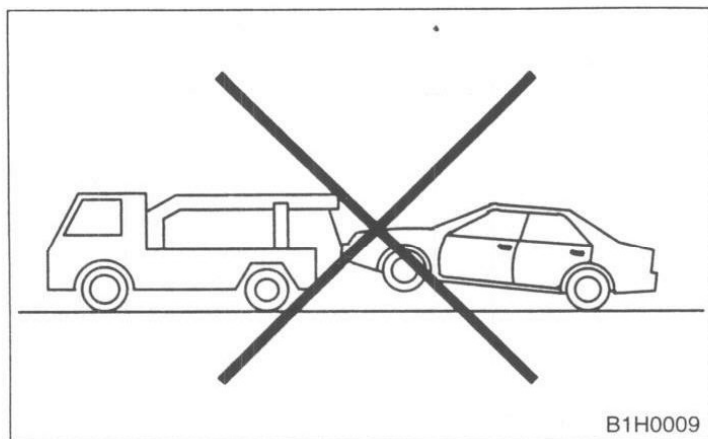


- Do not tow vehicle with rear wheels raised under any circumstances since this will damage bumper.



1. General Precautions

- Do not tow vehicle with front wheels raised under any circumstances since this will damage bumper.



F: NON-TURBO FULL TIME AWD AT MODELS

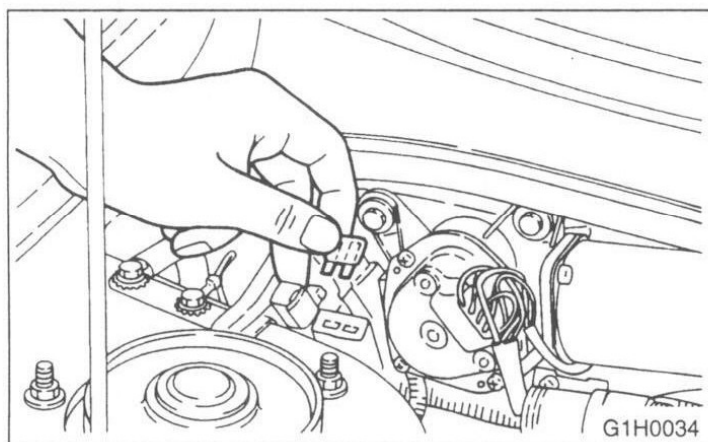
1. BEFORE CHECKING OR SERVICING CARS WITH THE FRONT WHEELS RAISED OR ON ROLLERS (BRAKE TESTER, CHASSIS DYNAMOMETER, ETC.)

Always set the car in the FWD mode.

To set the car in the FWD mode, disconnect the AWD circuit by inserting a fuse in the FWD connector inside the engine compartment. Also chock the rear wheels firmly.

CAUTION:

Ensure that the FWD pilot light is on. If the car is left in the AWD mode, it will surge abruptly when the wheels turn, possibly damaging the transfer clutch.

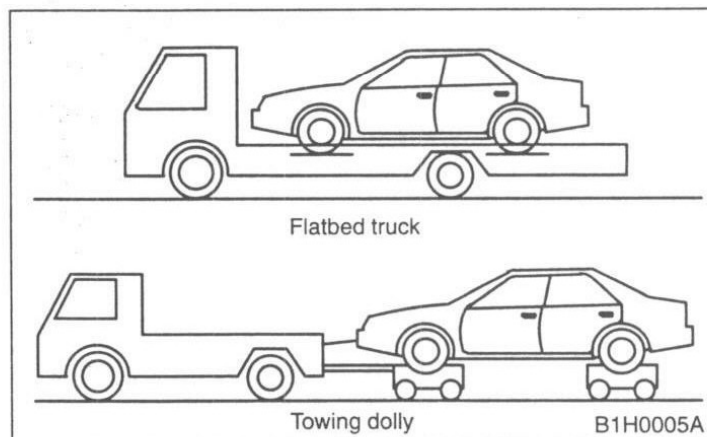


2. TOWING

- 1) Loading vehicle onto dolly or flat-bed truck

CAUTION:

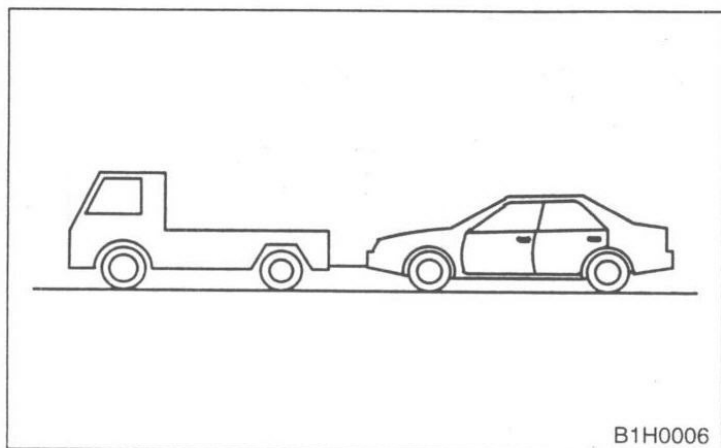
- Transport vehicle using a dolly or flat-bed truck whenever possible.
- Place the selector lever in "P" position and apply the parking brake.



- 2) Towing with a rope

CAUTION:

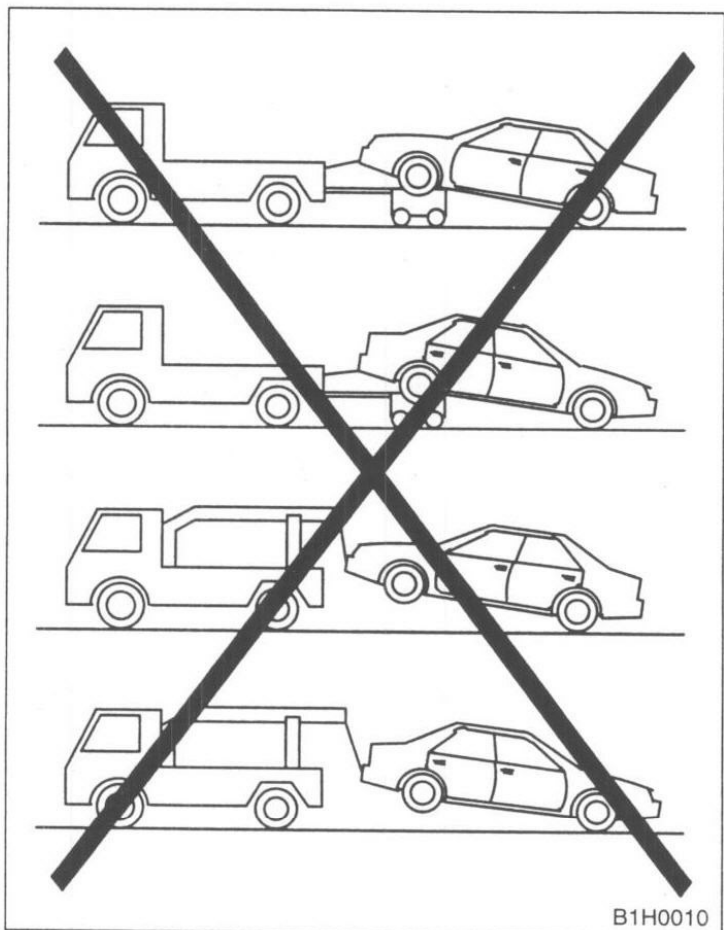
- Tow vehicle with a rope only when power train and all wheels are operating properly.
- Put a spare fuse inside the FWD connector and never exceed 30 km/h (19 MPH). Also, do not tow for more than 50 km (31 miles).
- Place the selector lever in "N" position.
- The ignition switch should be in the "ACC" position while the vehicle is being towed.
- Never use the tie down hooks for towing.
- Remember that brake booster and power steering will not work when the engine is "OFF". You will have to use greater effort for the brake pedal and steering wheel.
- Before towing, check transmission oil and differential oil levels and top up to the specified level if necessary.



- 3) Towing with front or rear wheels raised

CAUTION:

Do not tow vehicle with front or rear wheels raised under any circumstances since this will damage bumper.



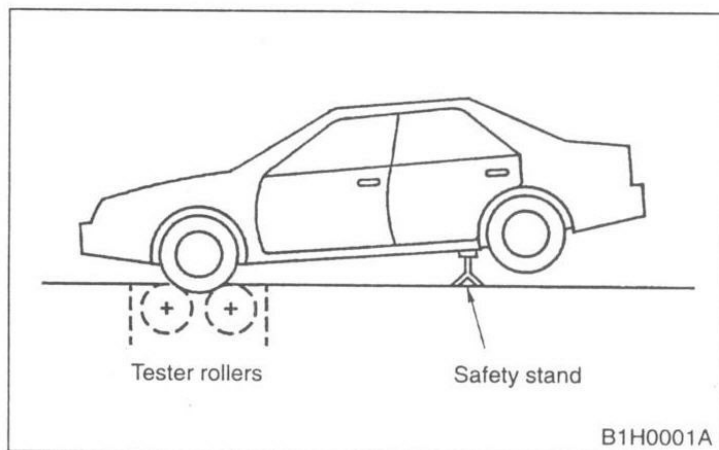
G: TURBO AT MODELS

1. SPEEDOMETER TEST (Jack-up method)

- 1) Position vehicle so that front wheels are between rollers of speedometer test machine.
- 2) Jack up vehicle until rear wheels clear the floor, support with safety stands.
- 3) Start engine with selector lever set in "2nd." (for added safety).
- 4) Perform speedometer tests.

WARNING:

- Secure a rope or wire to the front and rear towing or tie-down hook to prevent lateral runout of front wheels.
- Do not abruptly push down on accelerator pedal during tests even when engine is operating at low speeds since this may cause vehicle to jump off test machine.
- Avoid abrupt braking after tests.
- In order to prevent the vehicle from slipping due to vibration, do not place any wooden blocks or similar items between the safety stands and the vehicle.
- Since the rear wheels will also be rotating, do not place anything near them. Also, make sure that nobody gets in front of the vehicle.

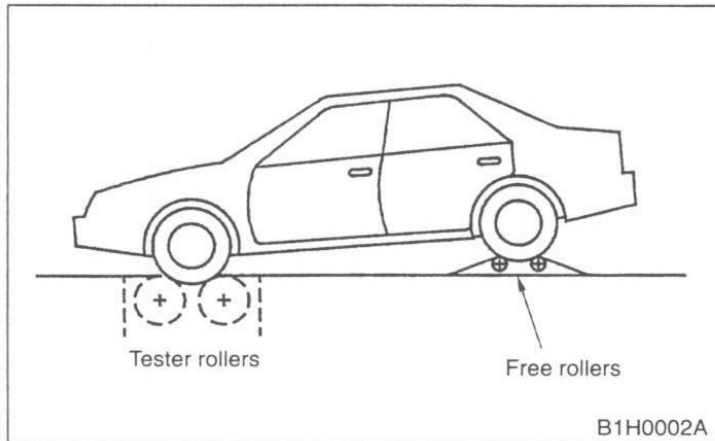


2. SPEEDOMETER TEST (Free roller method)

- 1) Position vehicle so that front wheels are between rollers of speedometer test machine.
- 2) Make an alignment mark corresponding with centerline of rear wheels on floor.
- 3) Back up vehicle so that centerline of free rollers are aligned with mark described in step 2 above.
- 4) Drive vehicle onto free rollers.
- 5) Perform speedometer tests.

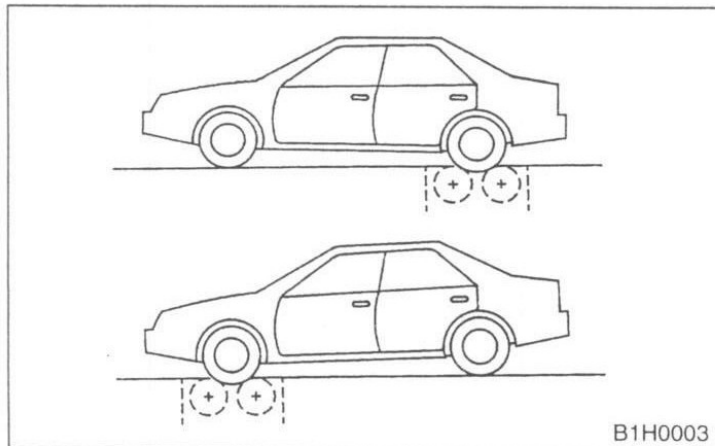
WARNING:

- Secure a rope or wire to the front and rear towing or tie-down hook to prevent the lateral runout of front wheels.
- Do not abruptly push down on accelerator pedal during tests even when engine is operating at low speeds since this may cause vehicle to jump off test machine.
- Avoid abrupt braking.



3. BRAKE TEST

- 1) Place vehicle onto brake tester.
- 2) Perform brake tests.



NOTE:

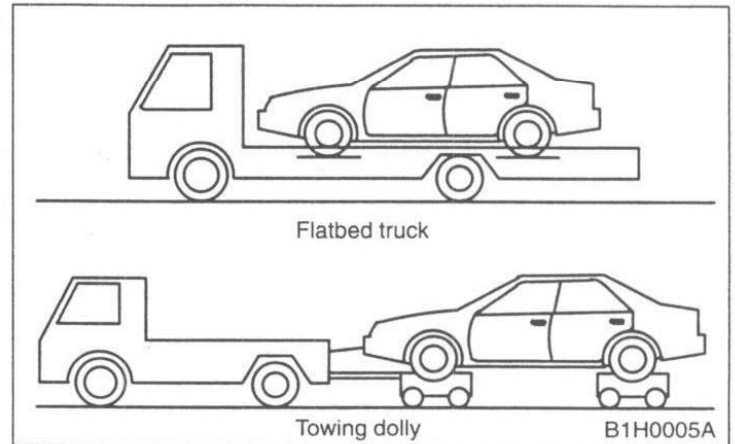
- Ensure front or rear wheels are in contact with the ground during tests.
- If dragging force exceeds specifications, check brake pad or shoe for dragging.

4. TOWING

- 1) Loading vehicle onto dolly or flat-bed truck

CAUTION

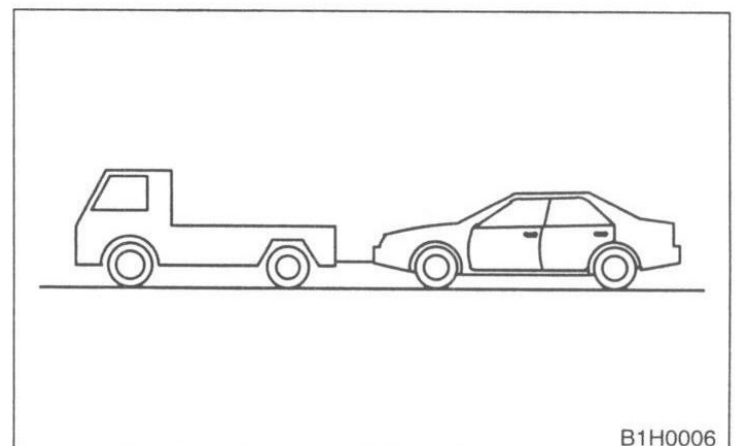
- Transport vehicle using a dolly or flat-bed truck whenever possible.
- Place the selector lever in "P" position and apply the parking brake.



- 2) Towing with rope

CAUTION:

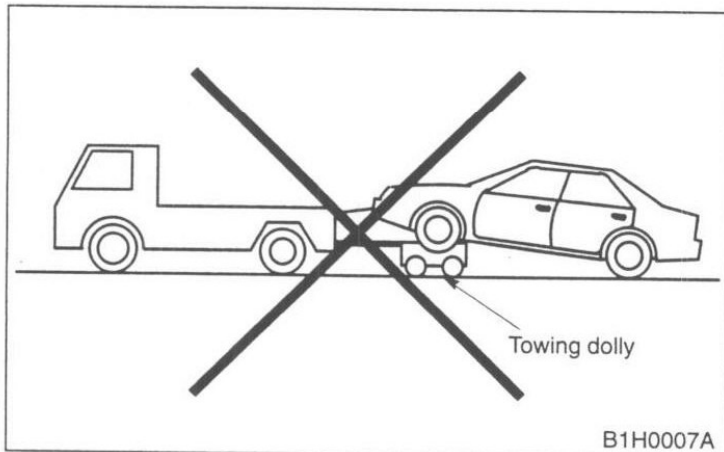
- Tow vehicle with a rope only when power train and all wheels are operating properly.
- Never exceed 30 km/h (19 MPH). Also, do not tow for more than 10 km (6 miles).
- Place the selector lever in "N" position.
- The ignition switch should be in the "ACC" position while the vehicle is being towed.
- Remember that brake booster and power steering will not work when the engine is "OFF". You will have to use greater effort for the brake pedal and steering wheel.
- Before towing, check transmission oil and differential oil levels and top up to the specified level if necessary.



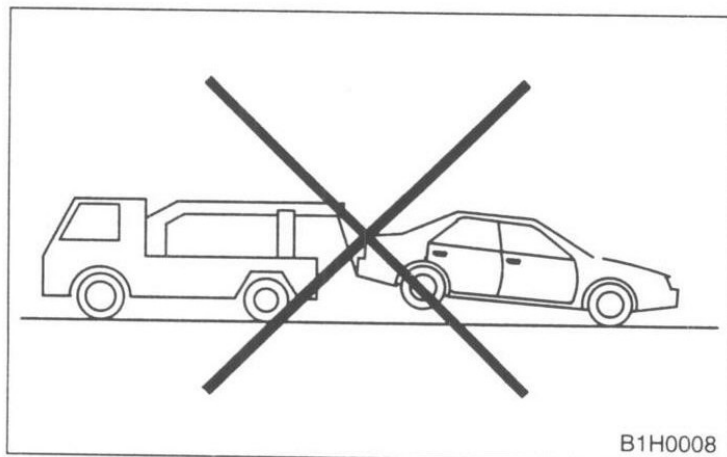
3) Towing with front or rear wheels raised

CAUTION:

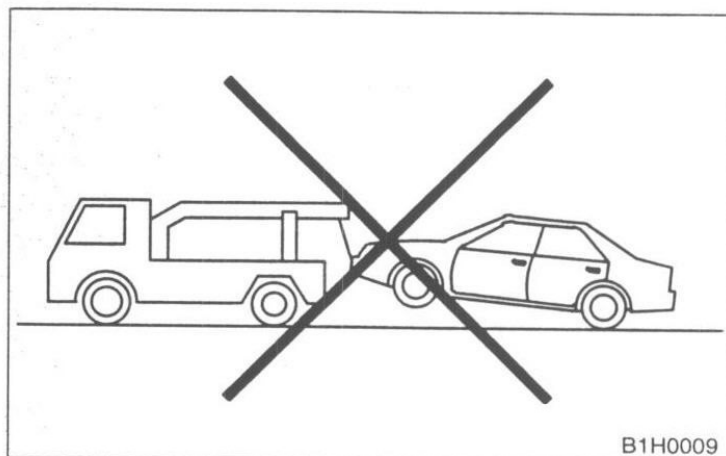
- Do not tow vehicle with only front or rear wheels placed on towing dolly or flat-bed truck. This may degrade multi-plate clutch (L.S.D.) performance or cause vehicle to jump off dolly or truck.



- Do not tow vehicle with rear wheels raised under any circumstances since this will damage bumper.



- Do not tow vehicle with front wheels raised under any circumstances since this will damage bumper.



2. Precaution for Supplemental Restraint System (Airbag)

The Supplemental Restraint System (Airbag) has been implemented in some Subaru vehicles. For proper and safe maintenance of this system, please ensure that you carefully read the precautionary notes given in "5-5 SUPPLEMENTAL RESTRAINT SYSTEM" in the Service Manual before servicing.

It should also be noted that in the SM table of contents, an AIRBAG mark is added to each of the items which do not directly concern the airbag system but need to be considered in their relationship to it. So, during the service work for such items, make sure you refer to "5-5 SUPPLEMENTAL RESTRAINT SYSTEM".

- **Take utmost care to follow faithfully the service procedures specified for the airbag, since otherwise it might deploy unexpectedly.**
- **With the airbag system, failures such as faulty connection of harness connectors or neglect of tightening sensor mounting bolts can lead to failure of deployment in an accident. Recheck each check point after maintenance work and use the on-board self-diagnosis to ensure there is nothing wrong with the system.**
- **All wire harnesses of the airbag system are encased in a yellow cover to make them distinct from those of other systems.**

The following are the parts involved in the airbag installation:

- 1) Steering wheel
- 2) Steering column
- 3) Toe-board (center, left & right ends)
- 4) Front seat floor and side seal
- 5) Inside left and right front fenders
- 6) Front pillar (left, lower)
- 7) Combination meter
- 8) Steering support beam
- 9) Instrument panel

Care should be taken when servicing in areas where the above parts are installed since it can affect the airbag system.

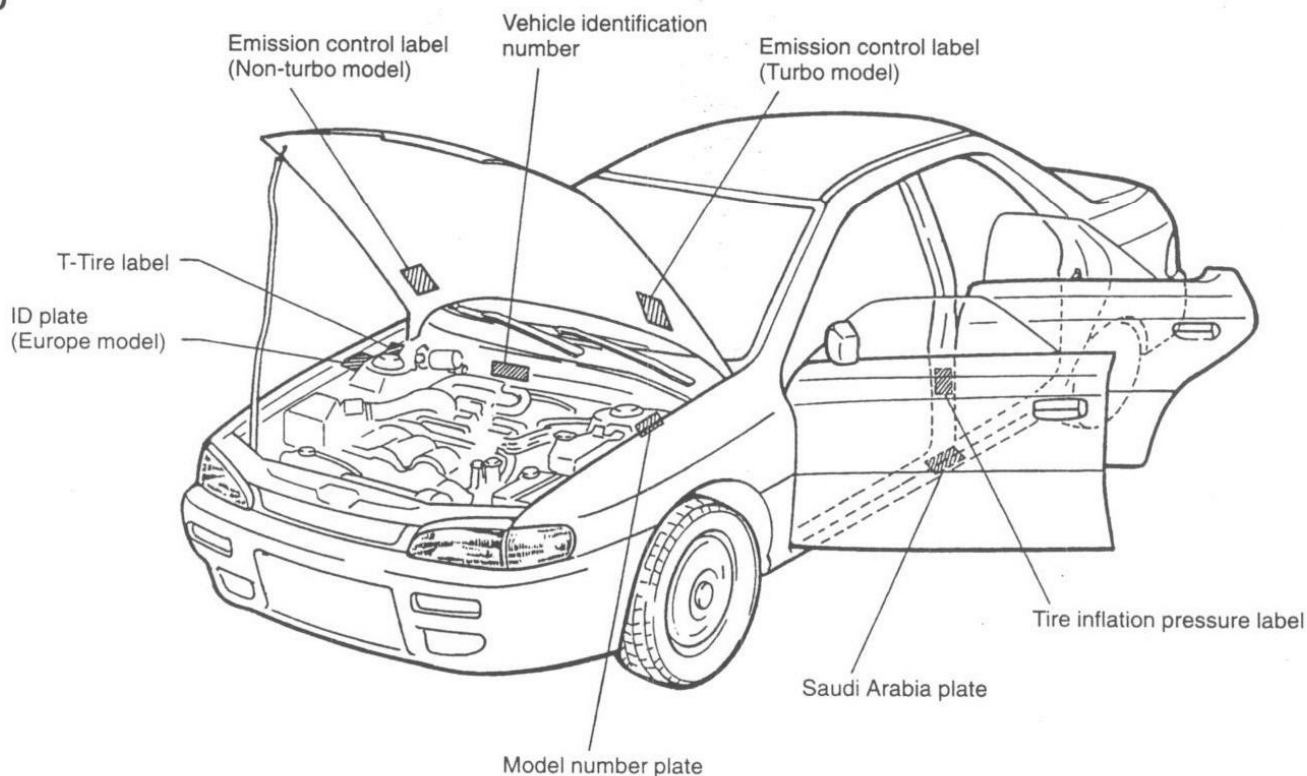
- Examples of service work involving the airbag system:

- 1) Replacement of steering gear
- 2) Steering maintenance and repair of the area adjoining toe-board
- 3) Removal and installation of combination meter
- 4) Installation of car stereo and other optional extras
- 5) Sheet metal repair paint work on the body front

4. Identification Number and Label Locations

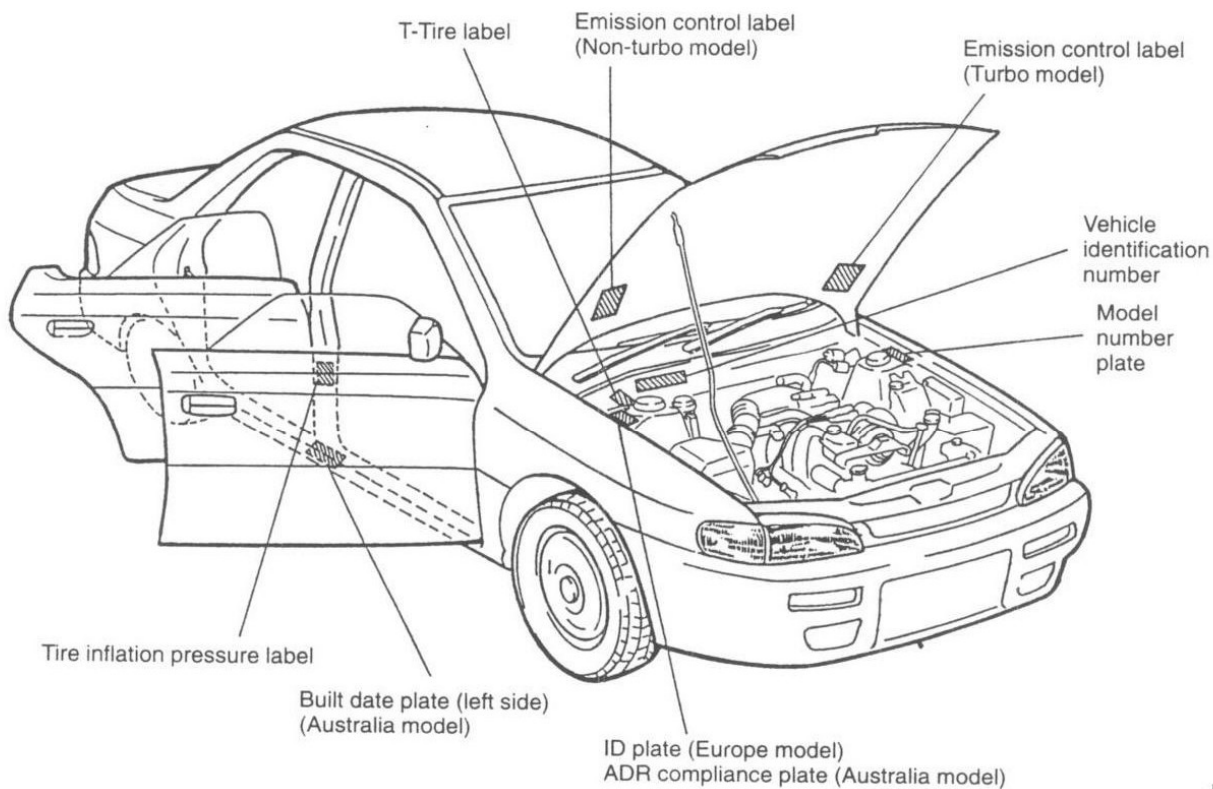
Engine, transmission and vehicle identification numbers are used for factory communications such as Technical Information, Service Bulletins and other information.

LHD



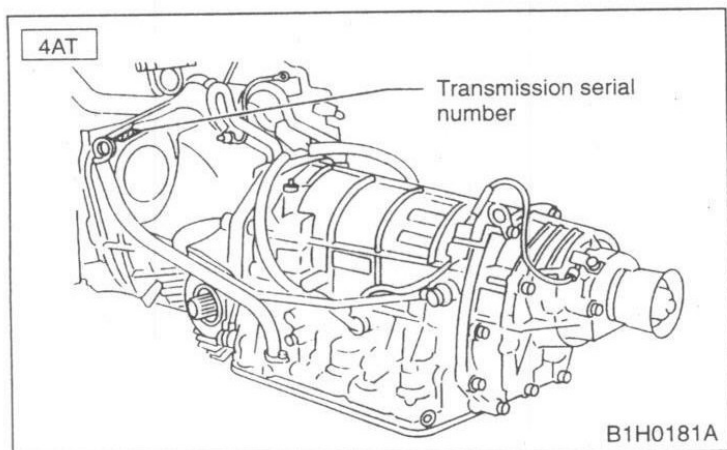
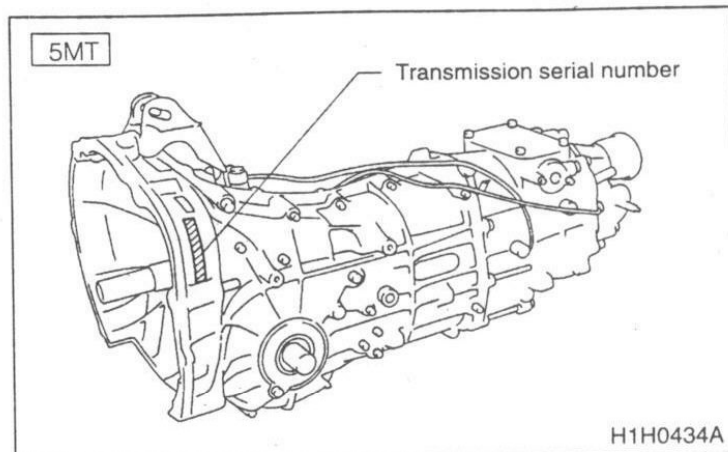
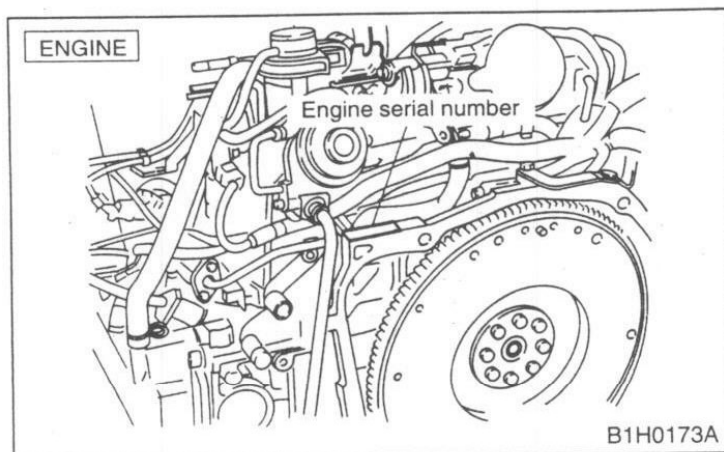
H1H0482A

RHD



H1H0483A

4. Identification Number and Label Locations



5. Recommended Fuel, Lubricants, Sealants and Adhesives

A: FUEL

1) With catalytic convertor

- Non-turbo model

The engine is designed to provide satisfactory performance while producing low exhaust emissions by using **unleaded** gasoline with an octane rating 90 or above (the octane rating selected by the Research Method).

- Turbo model

The engine is designed to provide satisfactory performance while producing low exhaust emissions by using **unleaded** gasoline with an octane rating 95 or above (the octane rating selected by the Research Method).

2) Without catalytic convertor

The engine is designed to provide satisfactory performance while producing low exhaust emissions by using gasoline with an octane rating 90 or above (the octane rating selected by the Research Method).

B: FUELS CONTAINING ALCOHOL

Some gasoline blends sold at service stations contain alcohol or other oxygenates even though that fact may not be fully disclosed. If you are not sure whether there is alcohol present in the fuel, ask your service station operator.

Do not use such fuels unless the gasoline/alcohol blend is suitable for your vehicle as explained at right:

- The fuel should be unleaded and have an octane rating no lower than that recommended below.

- Never use fuel containing more than 10% ethanol (ethyl or grain alcohol).

- Methanol (methyl or wood alcohol) is sometimes mixed with unleaded gasoline. Methanol can be used in your vehicle **ONLY** if it does not exceed 5% of the fuel mixture **AND** it is accompanied by sufficient quantities of the proper co-solvents and corrosion inhibitors required to prevent fuel system damage. Otherwise, fuel containing methanol should not be used.

- Unleaded fuel blends which contain no more than 15% MTBE (methyl tertiary butyl ether) or other oxygenates and which are approved by the Environmental Protection Agency may be used.

- You should avoid using fuels mixed with alcohol or other oxygenates on an exclusive basis. If driving problems such as engine stalling or hard starting result when such fuels are used, immediately discontinue their use and switch back to unleaded gasoline that does not contain alcohol or other oxygenates.

CAUTION:

Take care not to spill fuel during refueling. Fuels containing alcohol may cause paint damage.

C: LUBRICANTS

Lubricants	Specifications	Remarks
Engine oil	- API Classification: SH or SG - ILSAC Certified - CCMC Specification: G4 or G5 - ACEA Specification: A1 or A2 or A3	- For SAE viscosity number, refer to the following table. - If it is impossible to get SH or SG grade, you may use SF grade.
- Transmission and differential gear oil - AWD rear differential gear oil	API Classification: GL-5	For SAE viscosity number, refer to the following table.
Automatic transmission fluid	DEXRON II or III type	—
Power steering fluid	DEXRON II or IIE or III type	—
Coolant	Genuine SUBARU Coolant (Part No. 000016218) (Anti-freeze, anti-corrosive ethylene glycol base)	For further coolant specifications, refer to the following table.
Brake fluid	DOT3 or DOT4	- FMVSS NO. 116 - Avoid mixing brake fluid of different brands to prevent the fluid performance from degrading. - When brake fluid is added, be careful not to allow any dust into the reservoir.
Clutch fluid	DOT3 or DOT4	- FMVSS NO. 116 - Avoid mixing clutch fluid of different brands to prevent the fluid performance from degrading. - When clutch fluid is added, be careful not to allow any dust into the reservoir.

Lubricants	Recommended	Application	Equivalent
Spray lubricants	SUBARU CRC (P/N 004301003)	O ₂ sensor	
Grease	SUNLIGHT 2 (P/N 003602010)	Steering shaft bearing, bushing for manual transmission gear shift system	—
	Valiant grease M-2 (P/N 003608001)	Steering gearbox	—
	Niglube RX-2 (P/N 003606000 or 725191040)	Piston boot of disc brake and sliding pin	—
	Molykote No. 7439 (P/N 725191460)	Contacting surfaces of drum brake shoes and shoe clearance adjuster	—
	Molylex No.2 (P/N 723223010)	BJ of rear axle shaft	—
	VU-3A702 (P/N 23223GA050)	DOJ of axle shaft	—
	NTG2218 (P/N 28093AA020)	BJ of front axle shaft	—
	FX clutch grease (P/N 000040901)	Splines of transmission main shaft	—
	Slicolube G-30M (P/N 004404002)	Control cables and throttle linkages subject to cold weather, water-pump impeller, door latch, striker, battery terminals, etc.	—

D: FLUID

CAUTION:

- Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands (Except engine oil).
- When replenishing oil, it does not matter if the oil to be added is a different brand from that in the engine; however, use oil having the API classification and SAE viscosity No. designated by SUBARU.
- As for the turbo models, SAE 5W-30 is not recommended for sustained high speed driving.

NOTE:

If vehicle is used in desert areas with very high temperatures or for other heavy duty applications, the following viscosity oils may be used:
30, 40, 10W-50, 20W-40, 20W-50

ITEM	API Classification	ILSAC Certification Mark	CCMC Specification	ACEA Specification	SAE Viscosity No. and Applicable Temperature						
					(°C) -30	-20	-15	0	15	30	40
Engine oil	SH or SG with the words "Energy Conserving II"		G4 or G5	A1 or A2 or A3	(°F) -22	-4	5	32	59	86	104
					10W-30, 10W-40						
					5W-30 (Turbo)						
					5W-30 PREFERRED (Non Turbo)						
•Transmission gear oil	GL-5	—	—	—	90						
					85W						
					80W						
					75W-90						
•AWD rear differential gear oil •Front differential gear oil for automatic transmission	GL-5	—	—	—	90						
					85W						
					80W						
					80W-90						
					(°F)	15	23		77		
					(°C)	-26	-5		25		
H1H0484A											

H1H0484A

E: COOLANT

CAUTION:

- Avoid using any coolant or only water other than this designated type to prevent corrosion.
- SUBARU's engine is aluminum alloy, and so special care is necessary.

Coolant Specifications							
Lowest anticipated atmospheric temperature	SUBARU coolant-to-water ratio (Volume) %	Specification gravity					Freezing point
		at 10°C (50°F)	at 20°C (68°F)	at 30°C (86°F)	at 40°C (104°F)	at 50°C (122°F)	
Above -30°C (-22°F)	50 — 50	1.084	1.079	1.074	1.068	1.062	-36°C (-33°F)
Above -15°C (5°F)	30 — 70	1.050	1.049	1.042	1.037	1.032	-16°C (3°F)

* It is recommended that distilled water be used.

F: SEALANTS

	Recommended	Application	Equivalent
Sealant	Three Bond 1105 (P/N 004403010)	Rear differential oil drain plug, bearing cap (#5), etc.	Dow Corning's No. 7038
	Three Bond 1215 (P/N 004403007)	Matching surface of oil pump, transmission case, etc. Flywheel and drive plate tightening bolts, etc.	Dow Corning's No. 7038
	Starcalking B-33A (P/N 000018901)	Sealing against water and dust entry through weatherstrips, grommets, etc.	Butyl Rubber Sealant
	Three Bond 1207C (P/N 004403012)	Matching surface of oil pan, oil pressure switch	—
	Three Bond 1102 (P/N 004403006)	Steering gear box adjust screw	—

G: ADHESIVES

Adhesive	Cemedine 5430L	Weatherstrips and other rubber parts, plastics and textiles except soft vinyl parts.	3M's EC-1770 EC-1368
	Cemedine 540	Soft vinyl parts, and other parts subject to gasoline, grease or oil, e.g. trim leather, door inner remote cover, etc.	3M's EC-776 EC-847 EC-1022 (Spray Type)
	Cemedine 3000	Bonding metals, glass, plastic and rubber parts. Repairing slightly torn weatherstrips, etc.	Armstrong's Eastman 910
	Essex Chemical Corp's Urethane E	Windshield to body panel.	Sunstar 580

6. Tightening Torque of Standard Bolts and Nuts

A: ENGINE AND TRANSMISSION

Unit: N.m (kg-m, ft-lb)

Dia. x Pitch (mm)	5T	7T	9T	10T
4 x 0.75	1.0 — 1.5 (0.105 — 0.155, 0.8 — 1.1)	1.5 — 2.0 (0.155 — 0.205, 1.1 — 1.5)	2.5 — 3.0 (0.255 — 0.305, 1.8 — 2.2)	3.0 — 3.5 (0.305 — 0.355, 2.2 — 2.6)
5 x 0.9	2.5 — 3.0 (0.255 — 0.305, 1.8 — 2.2)	2.9 — 3.9 (0.30 — 0.40, 2.2 — 2.9)	4.9 — 5.9 (0.50 — 0.60, 3.6 — 4.3)	5.4 — 6.4 (0.55 — 0.65, 4.0 — 4.7)
6 x 1.0	4.4 — 5.4 (0.45 — 0.55, 3.3 — 4.0)	5.9 — 6.9 (0.60 — 0.70, 4.3 — 5.1)	9.4 — 10.8 (0.955 — 1.105, 6.9 — 8.0)	10 — 12 (1.0 — 1.2, 7 — 9)
8 x 1.25	12 — 14 (1.2 — 1.4, 9 — 10)	14.2 — 17.2 (1.45 — 1.75, 10.5 — 12.7)	23 — 26 (2.3 — 2.7, 17 — 20)	25 — 28 (2.5 — 2.9, 18 — 21)
10 x 1.25	25 — 28 (2.5 — 2.9, 18 — 21)	30 — 36 (3.1 — 3.7, 22 — 27)	46 — 54 (4.7 — 5.5, 34 — 40)	49.5 — 58.4 (5.05 — 5.95, 36.5 — 43.0)
12 x 1.5	41 — 49 (4.2 — 5.0, 30 — 36)	53 — 63 (5.4 — 6.4, 39 — 46)	84 — 98 (8.6 — 10.0, 62 — 72)	88 — 106 (9.0 — 10.8, 65 — 78)
14 x 1.6	71 — 84 (7.2 — 8.6, 52 — 62)	88 — 106 (9.0 — 10.8, 65 — 78)	139 — 165 (14.2 — 16.8, 103 — 122)	147 — 175 (15.0 — 17.8, 108 — 129)

B: BODY

Unit: N.m (kg-m, ft-lb)

	Dia. (mm)	4T	7T	9T
   G1H0041	4	1.7 — 2.6 (0.17 — 0.27, 1.2 — 2.0)	—	—
	5	2.9 — 5.9 (0.30 — 0.60, 2.2 — 4.3)	—	—
	6	5.4 — 9.3 (0.55 — 0.95, 4.0 — 6.9)	—	—
	8	12.7 — 22.6 (1.30 — 2.30, 9.4 — 16.6)	22.6 — 42.2 (2.30 — 4.30, 16.6 — 31.1)	31.4 — 51.0 (3.20 — 5.20, 23.1 — 37.6)
	10	27.5 — 47.1 (2.80 — 4.80, 20.3 — 34.7)	51.0 — 86.3 (5.20 — 8.80, 37.6 — 63.7)	62.8 — 107.9 (6.40 — 11.00, 46.3 — 79.6)
	12	52.0 — 85.3 (5.30 — 8.70, 38.3 — 62.9)	88.3 — 156.9 (9.00 — 16.00, 65.1 — 115.7)	117.7 — 196.1 (12.00 — 20.00, 86.8 — 144.7)
In case bolt or nut with washer or spring washer    G1H0042	4	1.2 — 2.2 (0.12 — 0.22, 0.9 — 1.6)	—	—
	5	2.5 — 4.4 (0.25 — 0.45, 1.8 — 3.3)	—	—
	6	4.4 — 7.4 (0.45 — 0.75, 3.3 — 5.4)	—	—
	8	9.8 — 17.7 (1.10 — 1.80, 7.2 — 13.0)	17.7 — 31.4 (1.80 — 3.20, 13.0 — 23.1)	23.5 — 39.2 (2.40 — 4.00, 17.4 — 28.9)
	10	22.6 — 36.3 (2.30 — 3.70, 16.6 — 26.8)	37.3 — 66.7 (3.80 — 6.80, 27.5 — 49.2)	48.1 — 83.4 (4.90 — 8.50, 35.4 — 61.5)
	12	39.2 — 64.7 (4.00 — 6.60, 28.9 — 47.7)	68.6 — 117.7 (7.00 — 12.00, 50.6 — 86.8)	88.3 — 147.1 (9.00 — 15.00, 65.1 — 108.5)

NOTE:

The mark is embossed on the bolt head as follows:

- 4T — 4
- 5T — 5
- 7T — 7
- 9T — 9
- 10T — 10

7. Lifting, Towing and Tie-down Points

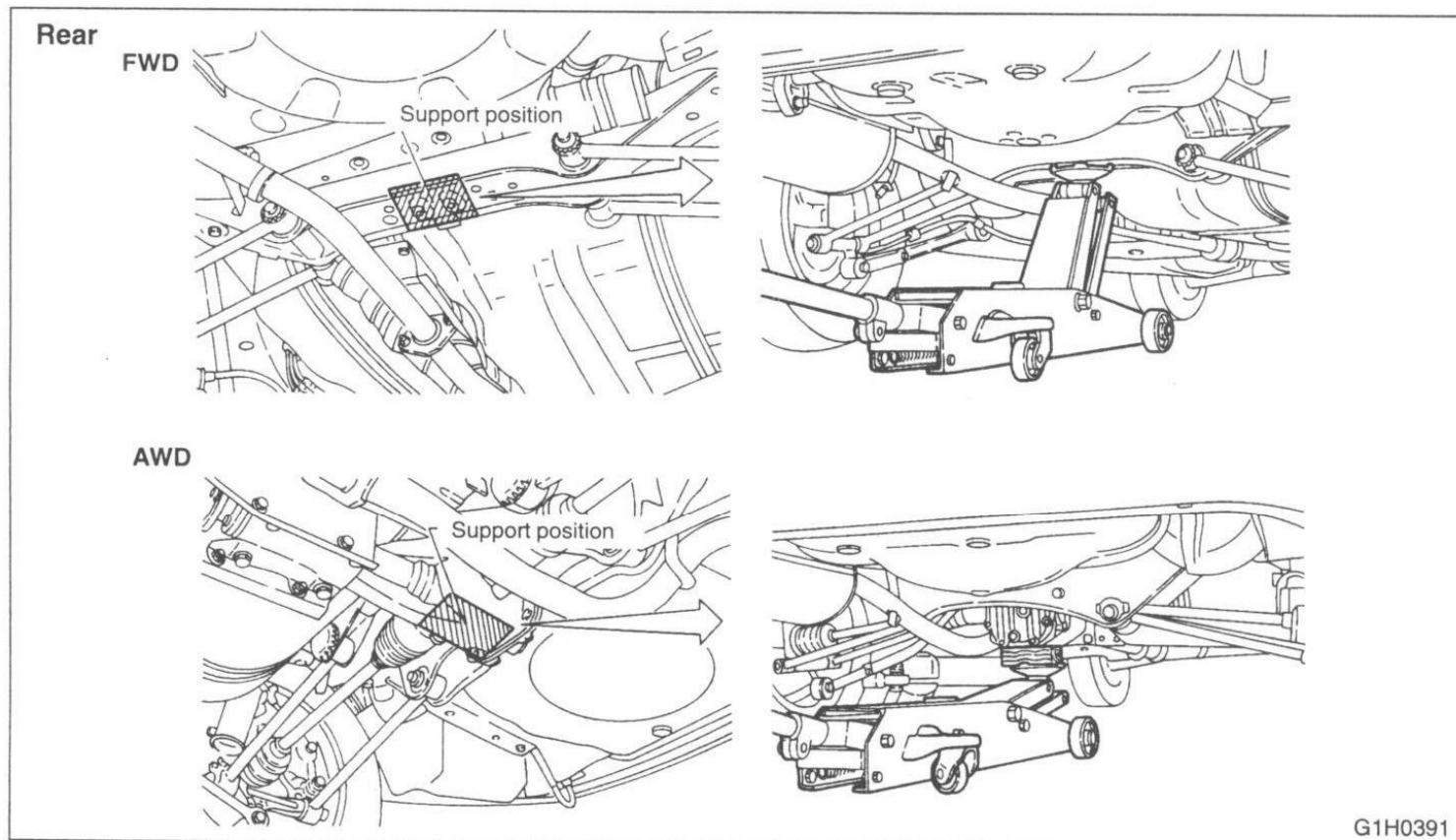
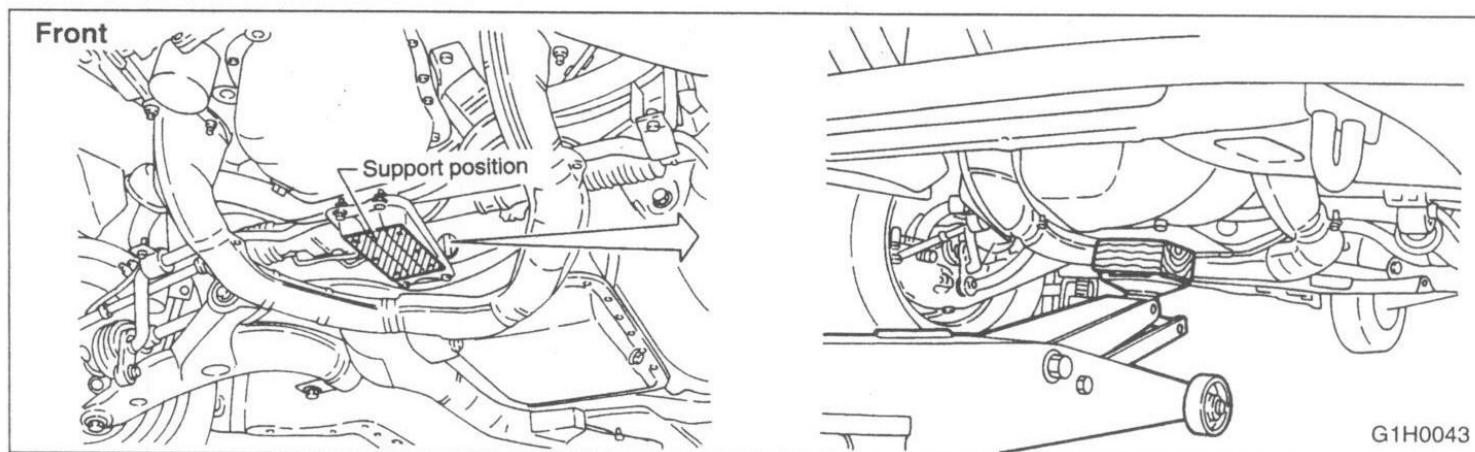
WARNING:

- Never get under the vehicle while it is supported by a jack.
- When jacking up the vehicle, place chocks to hold wheels.
- After jacking up the vehicle with garage jack, be sure to support the vehicle with stands for safety.
- Be sure to lift vehicle at the same four positions as those for pantograph jack.

CAUTION:

Be sure to lift, tow and tie-down the vehicle at the designated positions.

A: GARAGE JACK



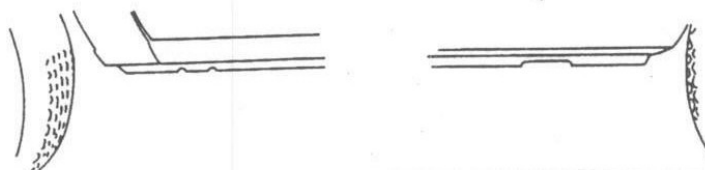
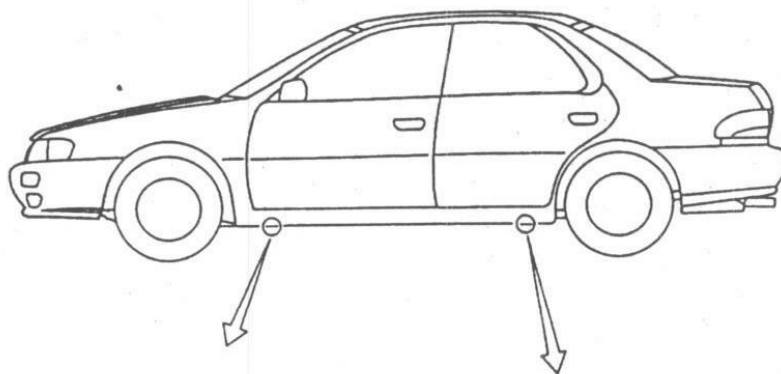
B: PANTOGRAPH JACK, SAFETY STAND AND LIFT**WARNING:**

- Never get under the vehicle while it is supported only by the jack. Always use safety stands to support body when you have to get under the car.
- Block the wheels diagonally by wheel chocks.

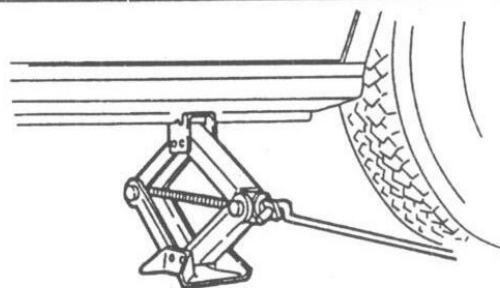
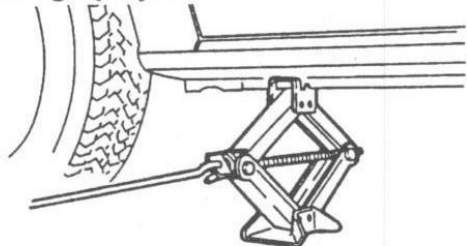
CAUTION:

- Make sure the jack is set at the correct position on the flange of side sill.
- Be careful not to set the jack at the air flap portion.

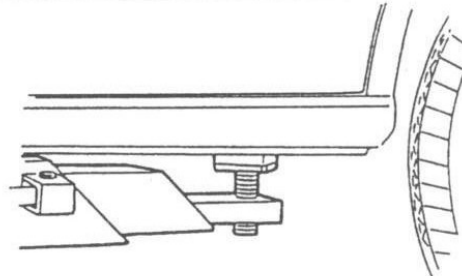
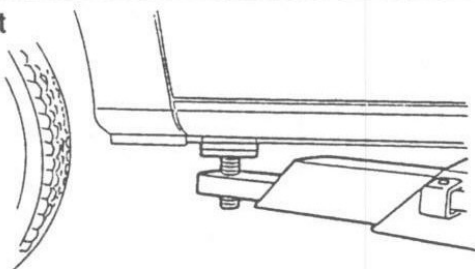
Support locations



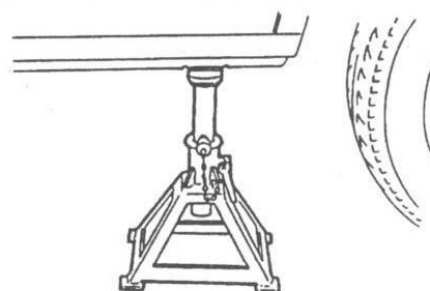
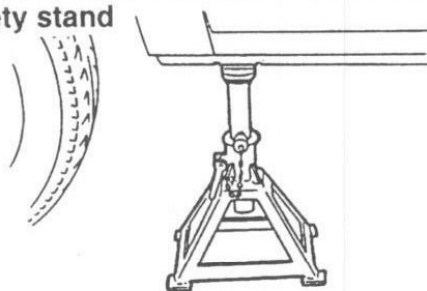
Pantograph jack



Lift



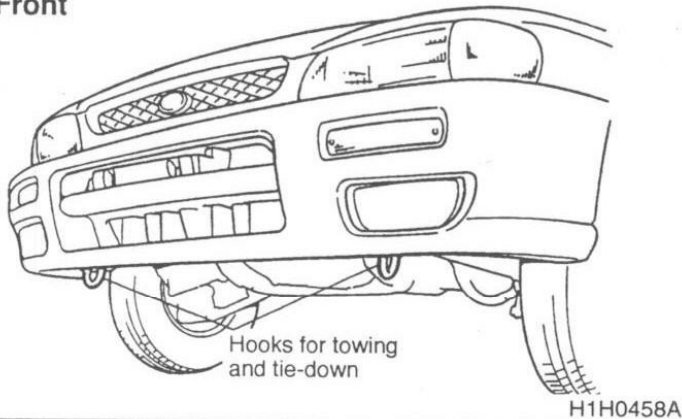
Safety stand



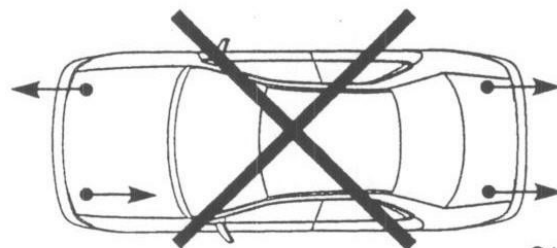
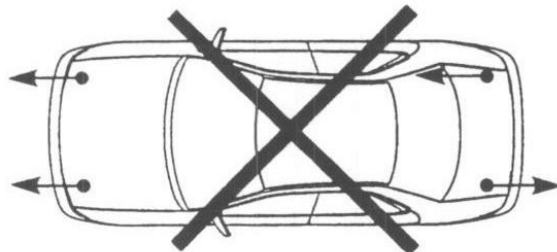
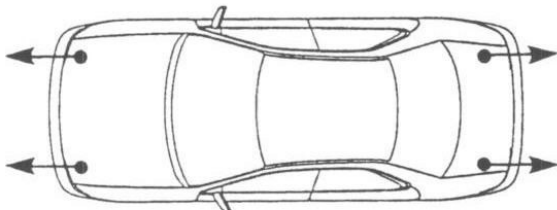
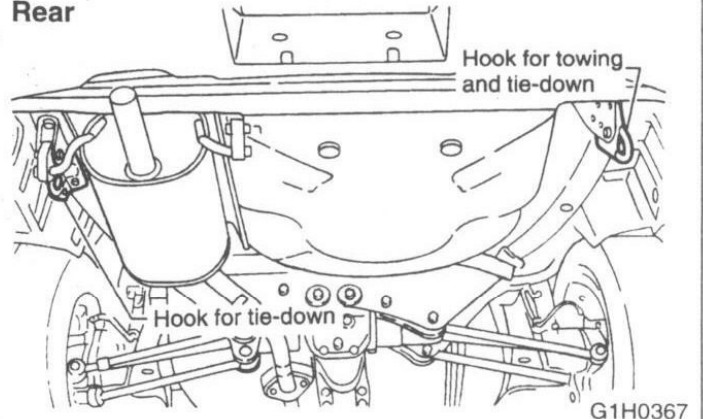
H1H0457A

C: TOWING AND TIE-DOWN HOOKS

Front



Rear



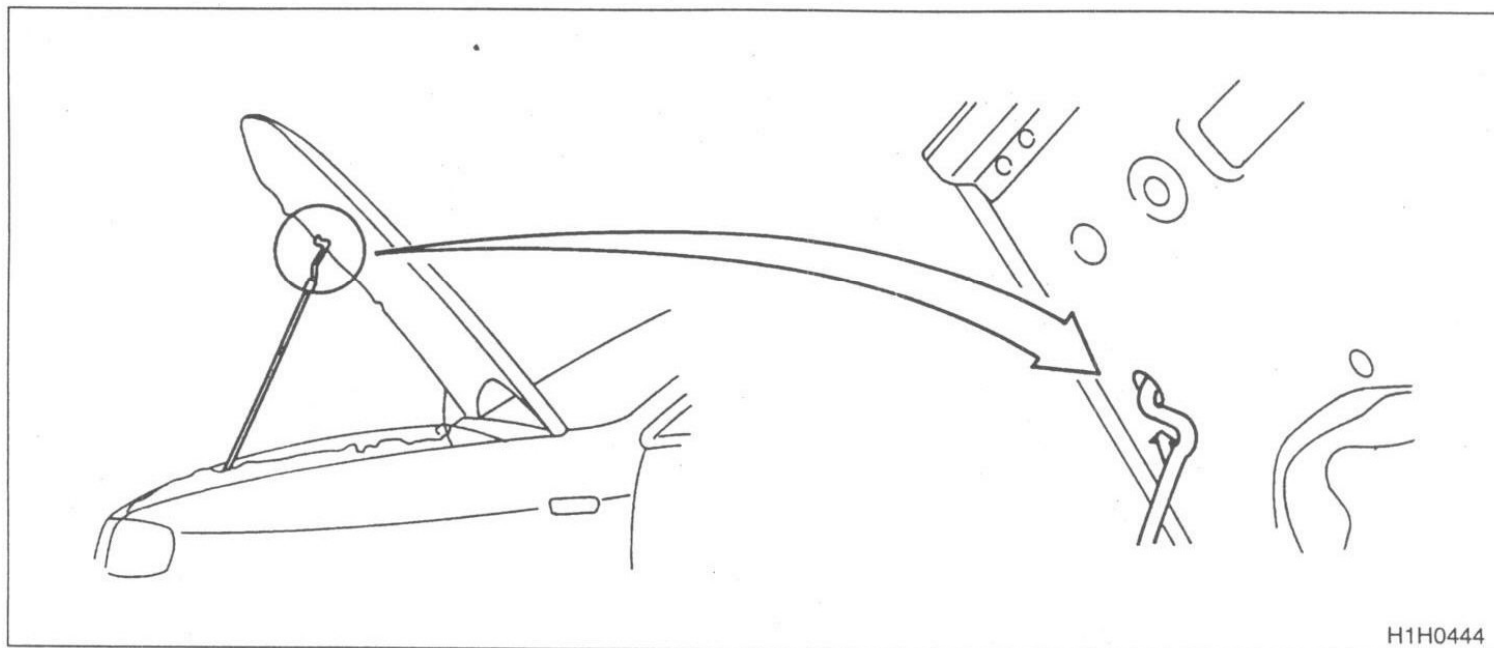
G1H0048

CAUTION:

- Avoid towing another car with front towing hooks.
- Do not tow a vehicle which is heavier than towing vehicle.
- Do not apply excessive lateral load to towing hook.
- Wrap the towing rope with cloth to prevent damaging bumper, etc.
- Keep the vehicle level during towing.
- Tie the front and rear tie-down hooks in the same direction.

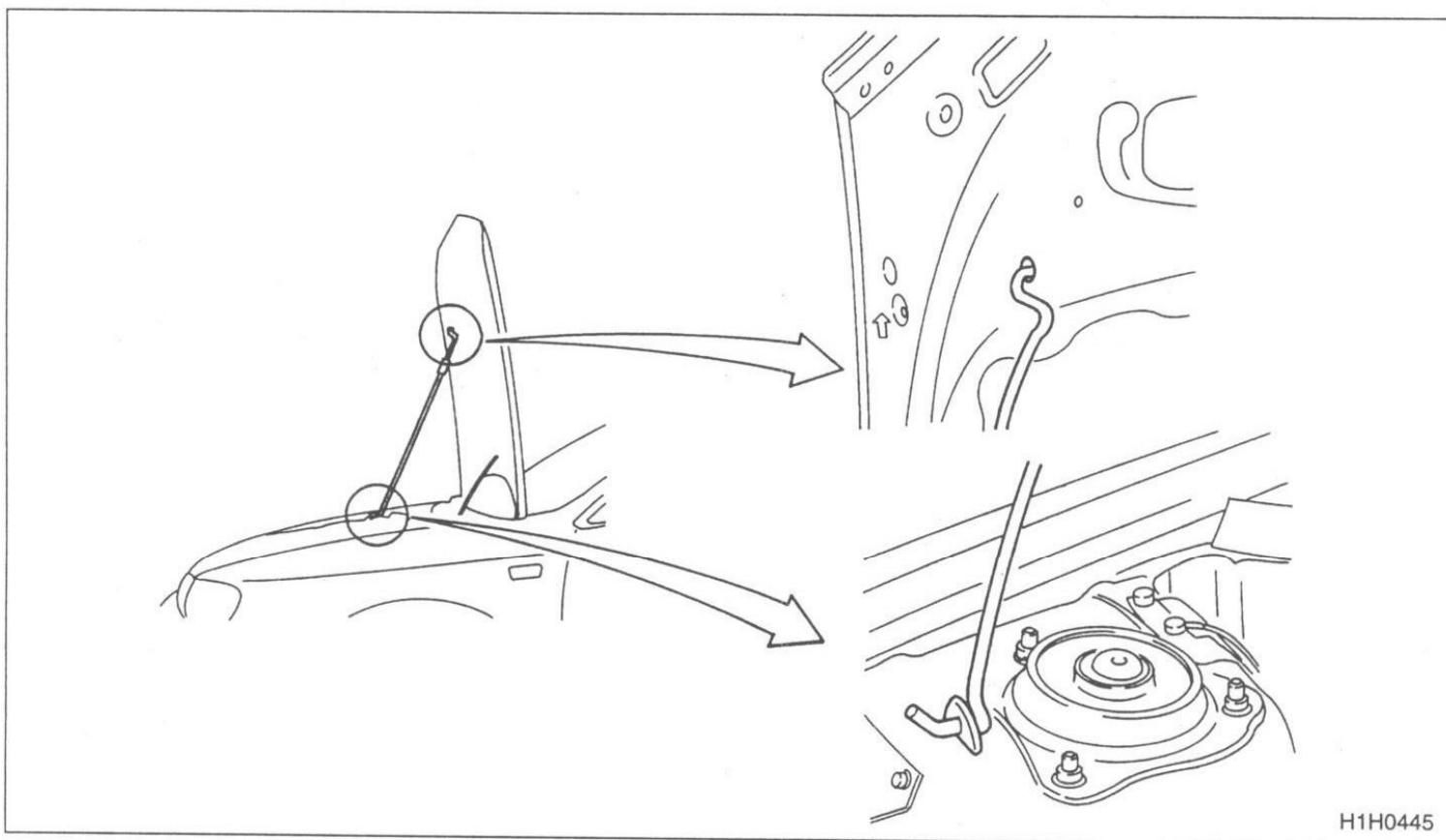
8. Front Hood Stay Installation

A: AT THE CHECK AND GENERAL MAINTENANCE



B: WHEN WIDER HOOD OPENING IS NECESSARY

Set stay into the hole of hood inner as shown in the figure below.



SCHEDULE OF INSPECTION AND MAINTENANCE SERVICES

Continue periodic maintenance beyond 100,000 km (60,000 miles) or 48 months by returning to the first column of the maintenance schedule and adding 100,000 km (60,000 miles) or 48 months to the column headings.

Symbols used:

R: Replace

I: Inspect, and then adjust, correct or replace if necessary.

P: Perform

(I): Recommended service for safe vehicle operation

	MAINTENANCE ITEM	MAINTENANCE INTERVAL (Number of months or km (miles), whichever occurs first)						REMARKS
		Months		12	24	36	48	
		x 1,000 km	1.6	25	50	75	100	
		x 1,000 miles	1	15	30	45	60	
1	Drive belt(s) (Except camshaft)			I	I	I	I	
2	Camshaft drive belt (Timing belt)						R	
3	Engine oil		Change every 12,500 km (7,500 miles) or 6 months whichever occurs first.					See NOTE 1)
4	Engine oil filter		Change every 12,500 km (7,500 miles) or 6 months whichever occurs first.					See NOTE 1)
5	Replace engine coolant and inspect cooling system, hoses and connections				P		P	
6	Replace fuel filter and inspect fuel system, line and connections				P		P	See NOTE 3)
7	Air cleaner element			I	R	I	R	See NOTE 2)
8	Spark plugs	For Non-Turbo		R	R	R	R	
		For Turbo					R	
9	Idle mixture [Except for catalyst model]		I	I	I	I	I	
10	Transmission/differential (Front & rear) lubricants (Gear oil)				R		R	See NOTE 4)
11	Automatic transmission fluid				R		R	See NOTE 4)
12	Brake fluid				R		R	See NOTE 5)
13	Disc brake pads and discs/Front and rear axle boots and axle shaft joint portions			I	I	I	I	See NOTE 3)
14	Brake linings and drums (Parking brake)				I		I	See NOTE 3)
15	Inspect brake lines and check operation of parking and service brake system			P	P	P	P	See NOTE 3)
16	Clutch and Hill-holder system			I	I	I	I	Adjust pedal free play at 1,600 km (1,000 miles)
17	Steering and suspension system			I	I	I	I	See NOTE 3)
18	Front and rear wheel bearing lubricant						(I)	
19	Valve clearance	For Europe	Inspect every 100,000 km (60,000 miles)					
		Except Europe	Inspect every 160,000 km (100,000 miles)					

NOTES:

- 1) When the vehicle is used under severe driving conditions mentioned below*, the engine oil and oil filter should be changed more frequently.
- 2) When the vehicle is used under severe driving conditions mentioned below*, the air cleaner element should be replaced more frequently.
- 3) When the vehicle is used under severe driving conditions mentioned below*, inspection should be performed at every 12,500 km (7,500 miles) or 6 months whichever occurs first.
- 4) When the automatic transmission vehicle is frequently operated under severe conditions, such as pulling trailer or driving on sand, replacement of automatic transmission fluid and front differential gear oil should be performed more frequently.
- 5) When the vehicle is used under following areas, change fluid every 25,000 km (15,000 miles) or 12 months whichever occurs first.

(1) High humidity areas

(2) Mountainous areas

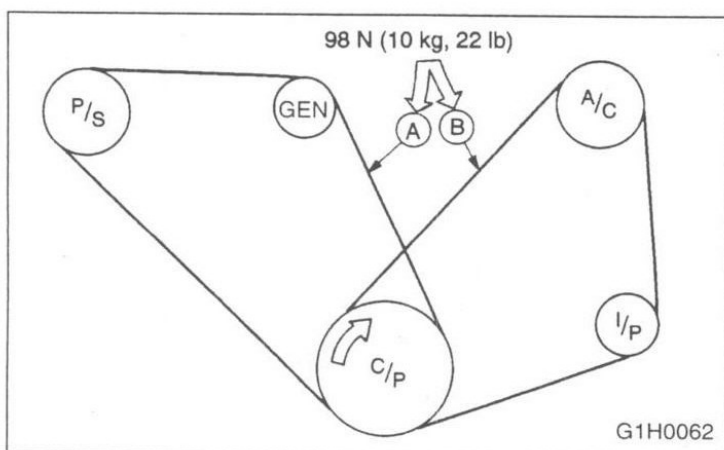
* Severe driving conditions:

- (1) Operating in extremely cold weather (Items 3, 4 and 17 only)
- (2) Pulling trailer (Items 3, 4, 13 and 14 only)
- (3) Repeated short trips (Items 3, 4, 13 and 14 only)
- (4) Driving in dusty roads (Items 7, 13, 14 and 17 only)
- (5) Driving in rough and/or muddy roads (Items 13, 14 and 17 only)
- (6) Driving in areas using road salt or other corrosive materials
(Items 6, 13, 14, 15 and 17 only)
- (7) Living in coastal areas (Items 6, 13, 14, 15 and 17 only)

1. Drive Belt(s) [Except Camshaft] (Inspect drive belt tension)

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]

Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60



A: INSPECTION

- 1) Replace belts, if cracks, fraying or wear is found.
- 2) Check drive belt tension and adjust it if necessary by changing generator installing position and/or idler pulley installing position.

Belt tension

Ⓐ	replaced:	7 — 9 mm (0.276 — 0.354 in)
	reused:	9 — 11 mm (0.354 — 0.433 in)
*Ⓑ	replaced:	7.5 — 8.5 mm (0.295 — 0.335 in)
	reused:	9.0 — 10.0 mm (0.354 — 0.394 in)

C/P: Crankshaft pulley

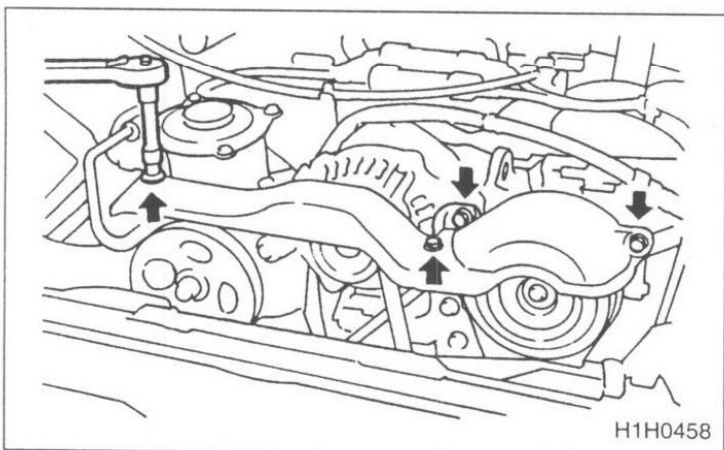
GEN: Generator

P/S: Power steering oil pump pulley

A/C: Air conditioning compressor pulley

I/P: Idler pulley

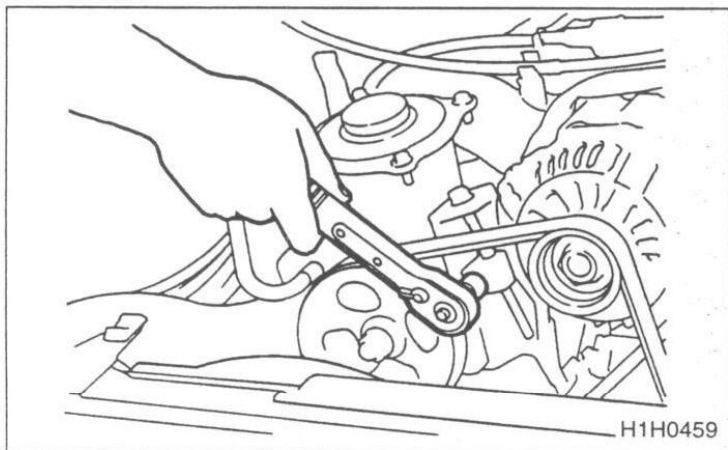
*: There is no belt [B] on models without an air conditioning.



B: REPLACEMENT

1. V-BELT COVER

- 1) Remove V-belt cover.



2. FRONT SIDE BELT

(Driving Power Steering Oil Pump and Generator)

- 1) Loosen the lock bolt on the slider bolt.
- 2) Loosen the slider bolt.
- 3) Remove the front side belt.
- 4) Install a new belt, and tighten the slider bolt so as to obtain the specified belt tension shown on the previous page.
- 5) Tighten the lock bolt.
- 6) Tighten the slider bolt.

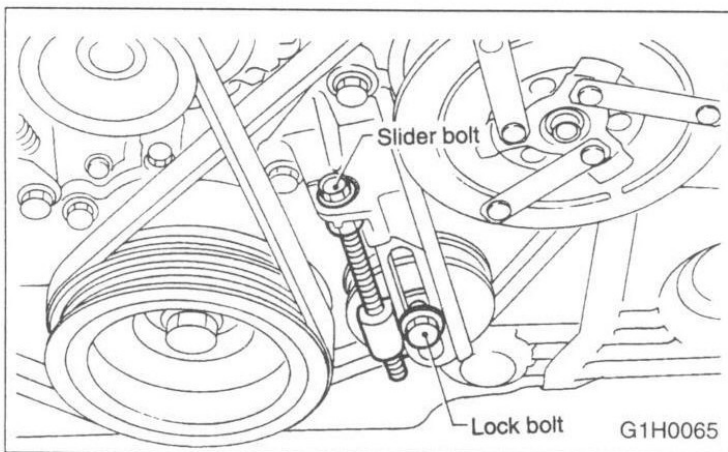
CAUTION:

Wipe off any oil or water on the belt and pulley.

Tightening torque:

Lock bolt, through bolt: $25 \pm 2 \text{ N.m}$
($2.5 \pm 0.2 \text{ kg-m}$, $18 \pm 1.5 \text{ ft-lb}$)

Slider bolt: $8 \pm 2 \text{ N.m}$
($0.8 \pm 0.2 \text{ kg-m}$, $5.5 \pm 1.5 \text{ ft-lb}$)



3. REAR SIDE BELT

(Driving Air Conditioning)

Before removing the rear side belt, remove the front side belt.

- 1) Loosen the lock bolt on the slider bolt.
- 2) Loosen the slider bolt.
- 3) Remove the rear side belt.
- 4) Install a new belt, and tighten the slider bolt so as to obtain the specified belt tension shown on the previous page.
- 5) Tighten the lock nut.
- 6) Tighten the slider bolt.

CAUTION:

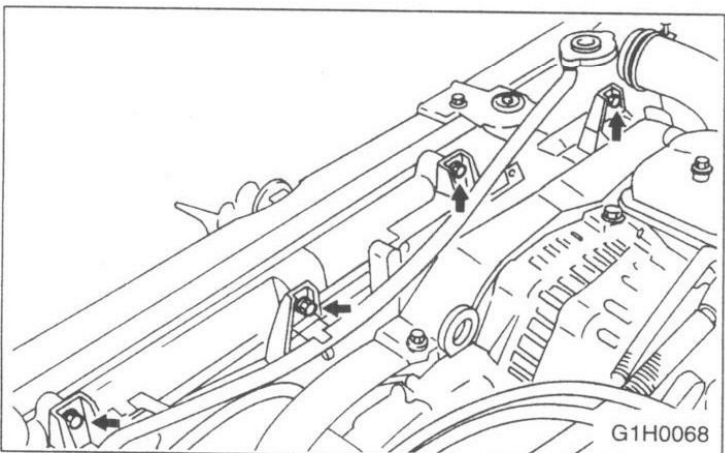
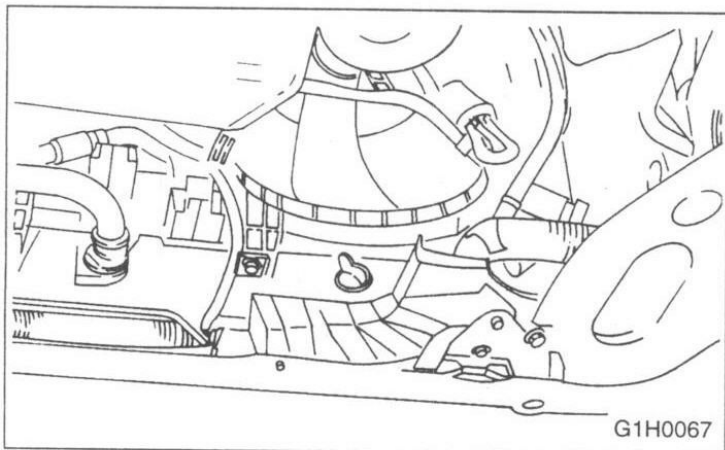
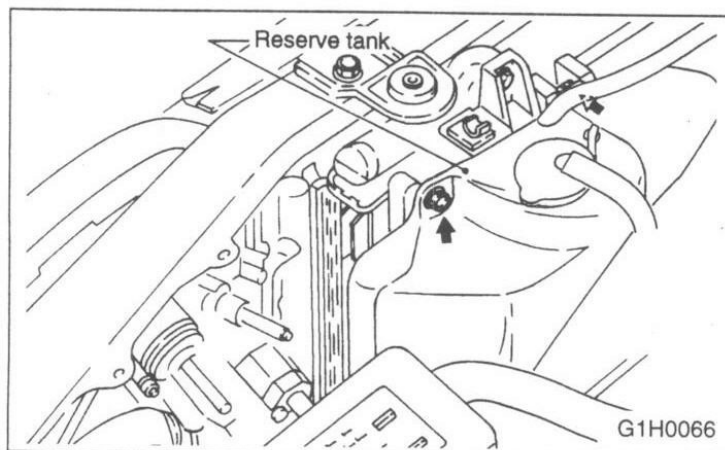
Wipe off any oil or water on the belt and pulley.

Tightening torque (Lock bolt):

$22.6 \pm 2.9 \text{ N.m}$
($2.3 \pm 0.3 \text{ kg-m}$, $16.6 \pm 2.2 \text{ ft-lb}$)

2. Camshaft Drive Belt (Timing Belt)

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
					R



A: REPLACEMENT

1. SOHC MODEL

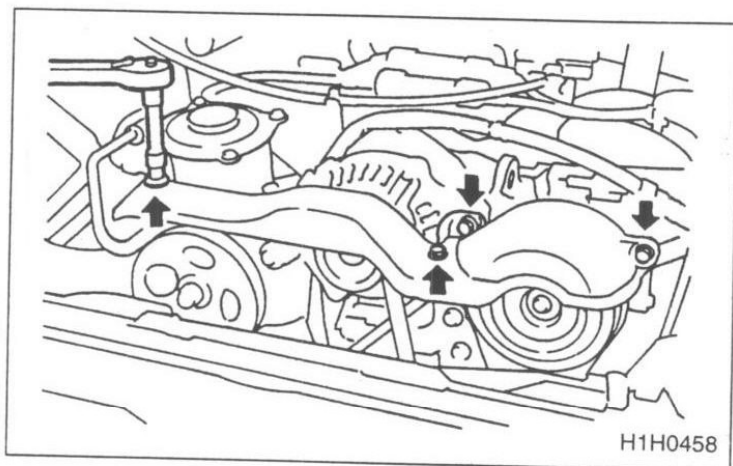
- 1) Disconnect ground cable (-) from battery.
- 2) Remove reserve tank.

- 3) Remove radiator fan motor connector and air conditioning fan motor connector.

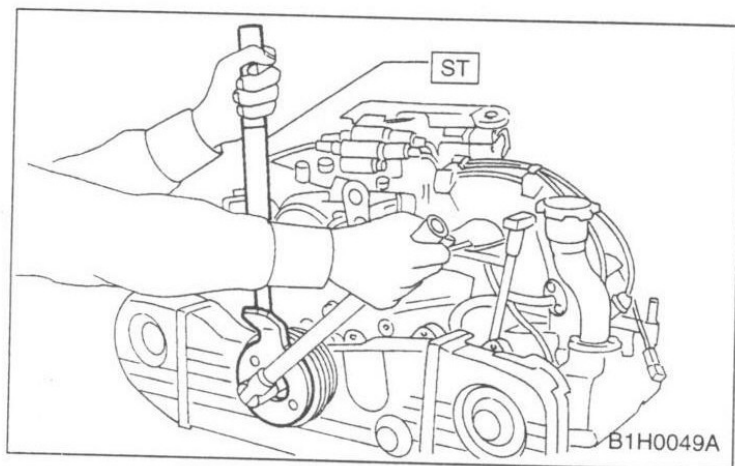
- 4) Remove radiator fan.
 - (1) Remove the two bolts from the upper side of the shroud.
 - (2) Remove radiator fan.

CAUTION:

Remove air conditioning fan in same steps described in the removal of radiator.



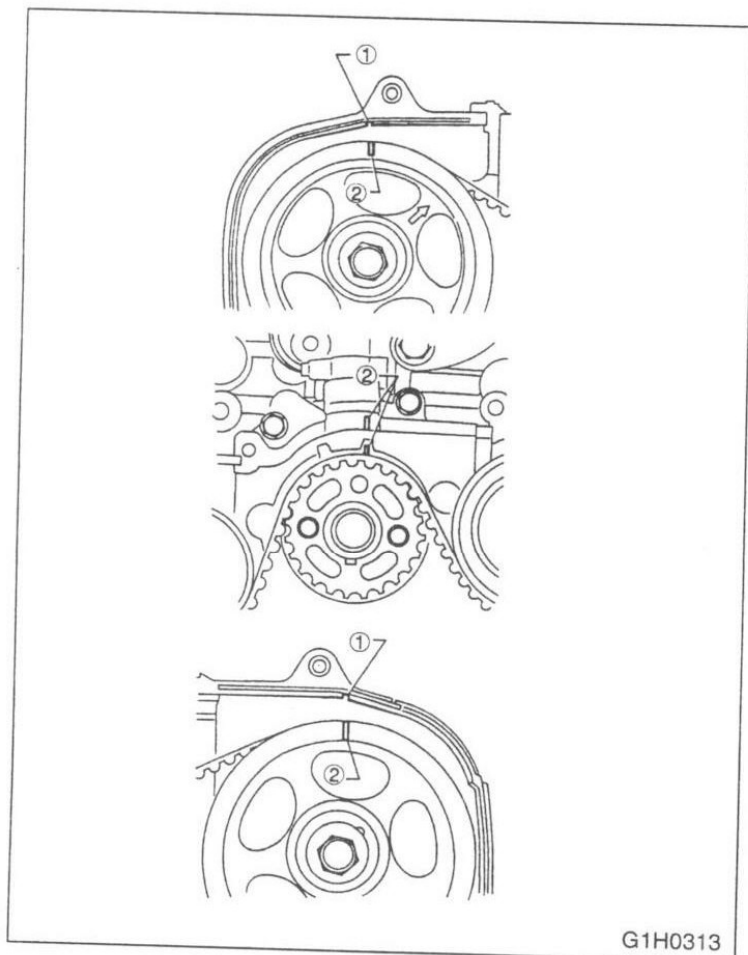
- 5) Remove V-belt cover.
- 6) Remove V-belts.
[Refer to "Drive Belt(s)".]
- 7) Remove air conditioning compressor drive belt tensioner.



- 8) Remove pulley bolt. To lock crankshaft use ST.

ST 499977000 CRANKSHAFT PULLEY WRENCH

- 9) Remove crankshaft pulley.
- 10) Remove left side belt cover.
- 11) Remove right side belt cover.
- 12) Remove front belt cover.



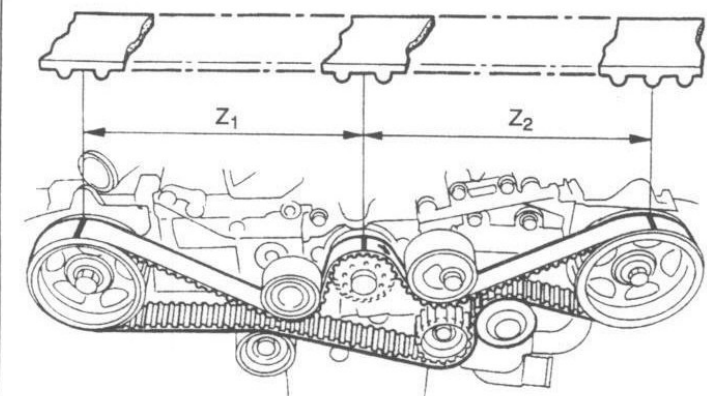
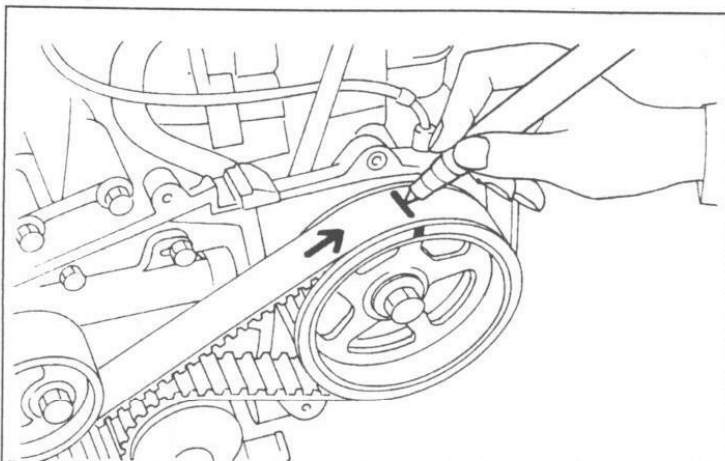
- 13) If alignment mark and/or arrow mark (which indicates rotation direction) on timing belt fade away, put new marks before removing timing belt as follows:

(1) Turn crankshaft and align alignment marks on crankshaft, and left and right camshaft sprockets with notches of belt cover and cylinder block.

ST 499987500 CRANKSHAFT SOCKET

- ① Notch
- ② Alignment mark

2. Camshaft Drive Belt (Timing Belt)



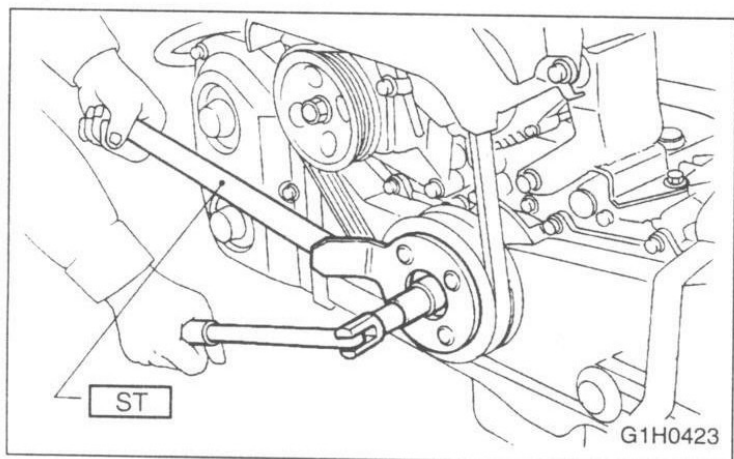
G2M0111

(2) Using white paint, put alignment and/or arrow marks on timing belts in relation to the sprockets.

- 11) Loosen tensioner adjuster mounting bolts.
- 12) Remove belt idler.
- 13) Remove belt idler No. 2.
- 14) Remove timing belt.

Z₁, 44 tooth length

Z₂, 40.5 tooth length



G1H0423

2. DOHC MODEL

1) Refer to 1) to 7) of camshaft drive belt. <Ref. to 1-5 [02A1]>

2) Remove pulley bolt. To lock crankshaft use ST.

ST 499977000

CRANKSHAFT PULLEY WRENCH

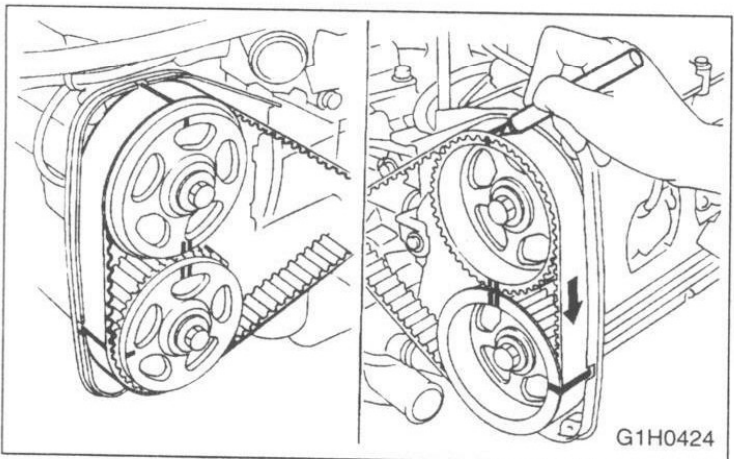
- 3) Remove crankshaft pulley.
- 4) Remove left side belt cover.
- 5) Remove right side belt cover.
- 6) Remove front belt cover.
- 7) If alignment mark and/or arrow mark (which indicates rotation direction) on timing belt fade away, put new marks before removing timing belt as follows:

(1) Turn crankshaft and align alignment marks on crankshaft, and left and right camshaft sprockets with notches of belt cover and cylinder block.

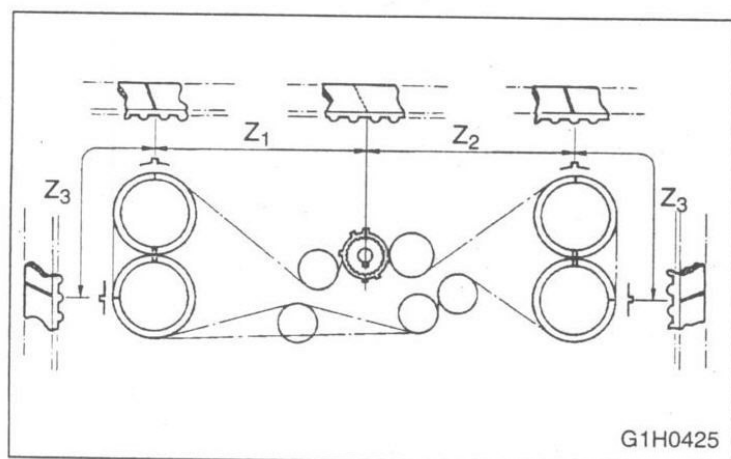
ST 499987500

CRANKSHAFT SOCKET

(2) Using white paint, put alignment and/or arrow marks on timing belts in relation to the sprockets.



G1H0424



- 8) Loosen tensioner adjuster mounting bolts.
- 9) Remove belt idler.
- 10) Remove belt idler No.2.
- 11) Remove timing belt.

Z₁, 54.5 tooth length

Z₂, 51 tooth length

Z₃, 28 tooth length

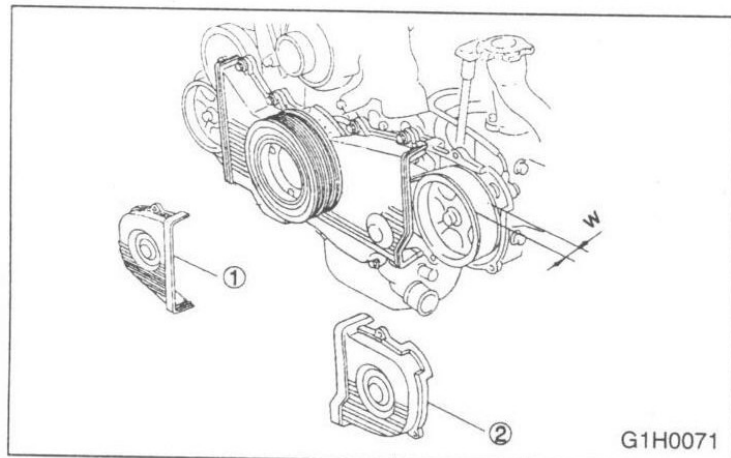
B: INSTALLATION

1. SOHC MODEL

To install, reverse order of removal procedures. For installation of tensioner adjuster and camshaft drive belt, refer to "2-3 ENGINE" [W3C0].

2. DOHC MODEL

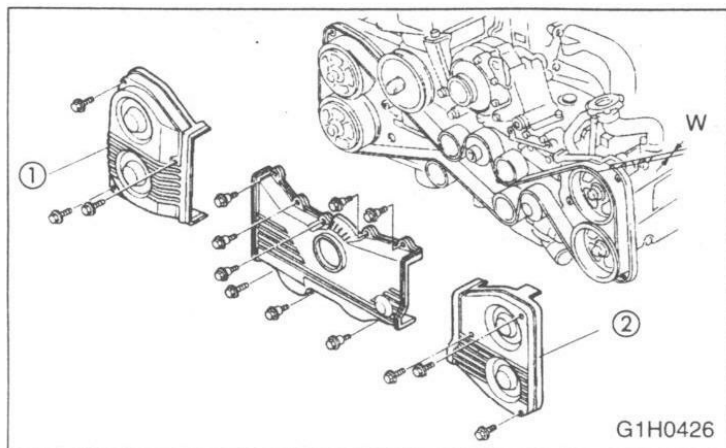
To install, reverse order of removal procedures. For installation of tensioner adjuster and camshaft drive belt, refer to "2-3b ENGINE" [W2C0].



C: INSPECTION

1. SOHC MODEL

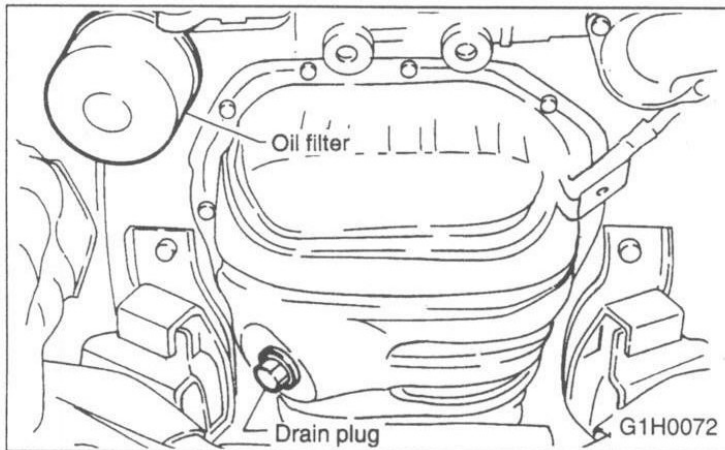
- 1) Remove left and right timing belt covers ① and ②.
- 2) While cranking engine at least four rotations, check timing belt back surface for cracks or damage. Replace faulty timing belt as needed.
- 3) Measure timing belt width W. If it is less than 27 mm (1.06 in), check idlers, tensioner, water pump pulley and cam sprocket to determine idler alignment (squareness). Replace worn timing belt.
- 4) Install left and right timing belt covers ① and ②.

**2. DOHC MODEL**

- 1) Remove left and right timing belt covers ① and ②.
- 2) While cranking engine at least four rotations, check timing belt back surface for cracks or damage. Replace faulty timing belt as needed.
- 3) Measure timing belt width W. If it is less than 30 mm (1.18 in), check idlers, tensioner, water pump pulley and cam sprocket to determine idler alignment (squareness). Replace worn timing belt.
- 4) Install left and right timing belt covers ① and ②.

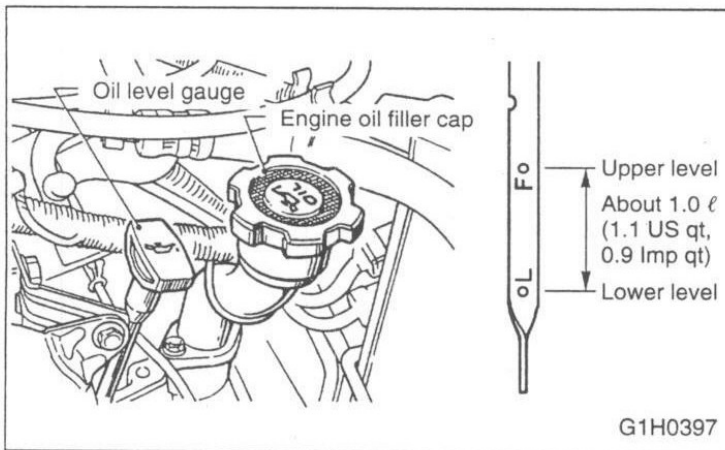
3. Engine Oil

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
Change every 12,500 km (7,500 miles) or 6 months. Whichever occurs first					

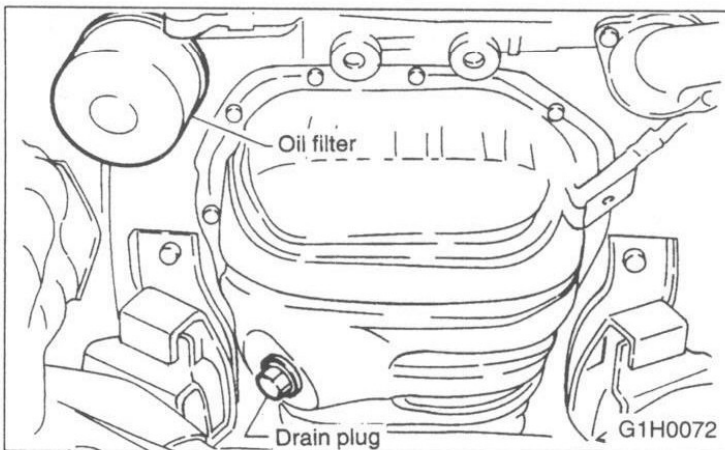


A: REPLACEMENT

1) Drain engine oil by loosening engine oil drain plug.



2) Open engine oil filler cap for quick draining of the engine oil.
Replace drain plug gasket.



3) Tighten engine oil drain plug after draining engine oil.

Tightening torque:
44 N.m (4.5 kg-m, 33 ft-lb)

3. Engine Oil

SAE Viscosity No. and Applicable Temperature						
(°F)	-30	0	32	60	90	104
(°C)	-34	-18	0	16	32	40
5W-30 PREFERRED (Non Turbo)						
10W-30, 10W-40						
5W-30(Turbo)						
						H1H0441

4) Fill engine oil through filler pipe up to upper point on level gauge. Make sure that vehicle is placed level when checking oil level. Use engine oil of proper quality and viscosity, selected in accordance with the table in figure.

Recommended oil

API classification: SH or SG,
CCMC specification G4 or G5,
ACEA specification A1 or A2 or A3,
or ILSAC certification mark is displayed
on the container
(If it is impossible to get SH or SG grade,
you may use SF grade.)

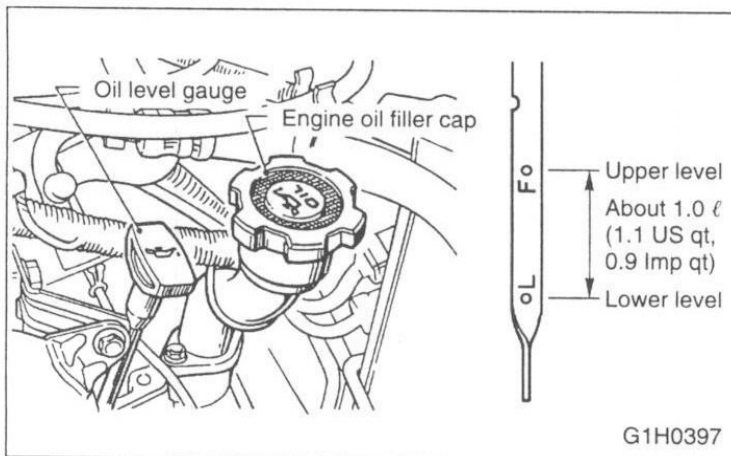


OM-H1027

The proper viscosity helps car get good cold and hot starting by reducing viscous friction and thus increasing cranking speed.

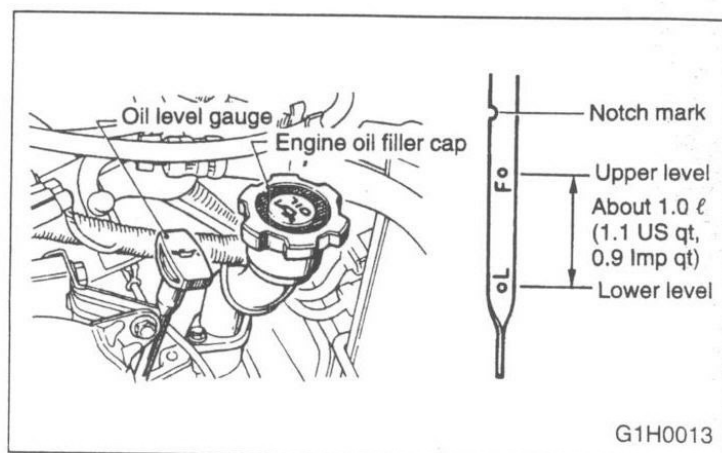
CAUTION:

- When replenishing oil, it does not matter if the oil to be added is a different brand from that in the engine; however, use oil having the API classification and SAE viscosity No. designated by SUBARU.
- As for the turbo models, SAE 5W-30 is not recommended for sustained high speed driving.



G1H0397

- 5) Close engine oil filler cap.
- 6) Start engine and warm it up for a time.
- 7) After engine stops, recheck the oil level. If necessary, add engine oil up to upper level on level gauge.



B: INSPECTION

- 1) Park vehicle on a level surface.
- 2) Remove oil level gauge and wipe it clean.
- 3) Reinsert the level gauge all the way. Be sure that the level gauge is correctly inserted and the proper orientation.
- 4) Remove it again and note the reading. If the engine oil level is below the "L" line, add oil to bring the level up to the "F" line.
- 5) After turning off the engine, wait a few minutes for the oil to drain back into the oil pan before checking the level.
- 6) Just after driving or while the engine is warm, engine oil level may show in the range between the "F" line and the notch mark. This is caused by thermal expansion of the engine oil.
- 7) To prevent overfilling the engine oil, do not add oil above the "F" line when the engine is cold.

Engine oil capacity (Non-Turbo model):

Upper level

4.0 l (4.2 US qt, 3.5 Imp qt)

Lower level

3.0 l (3.2 US qt, 2.6 Imp qt)

Engine oil capacity (Turbo model):

Upper level

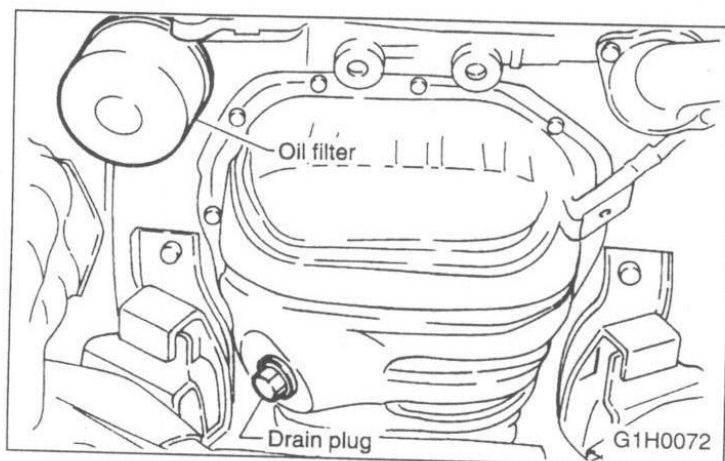
4.5 l (4.8 US qt, 4.0 Imp qt)

Lower level

3.5 l (3.7 US qt, 3.1 Imp qt)

4. Engine Oil Filter

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
Change every 12,500 km (7,500 miles) or 6 months. Whichever occurs first					



A: REPLACEMENT

1) Remove oil filter with ST.

ST 498547000 OIL FILTER WRENCH

2) Get a new oil filter and apply a thin coat of engine oil to the seal rubber.

3) Install oil filter by turning it by hand, being careful not to damage seal rubber.

4) Tighten more (approximately 2/3 to 3/4 turn) after the seal rubber contacts the oil pump case. Do not tighten excessively, or oil may leak.

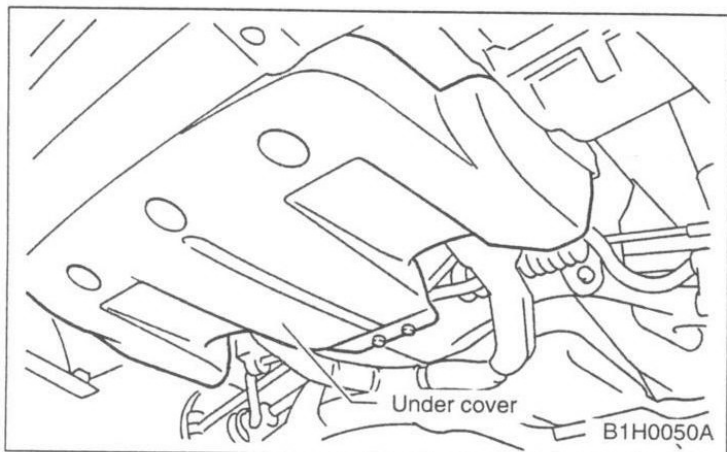
5) After installing oil filter, run engine and make sure that no oil is leaking around seal rubber.

NOTE:

The filter element and filter case are permanently joined; therefore, interior cleaning is not necessary.

5. Replace Engine Coolant and Inspect Cooling System, Hoses and Connections

MAINTENANCE INTERVAL [Number of months or km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
			P		P



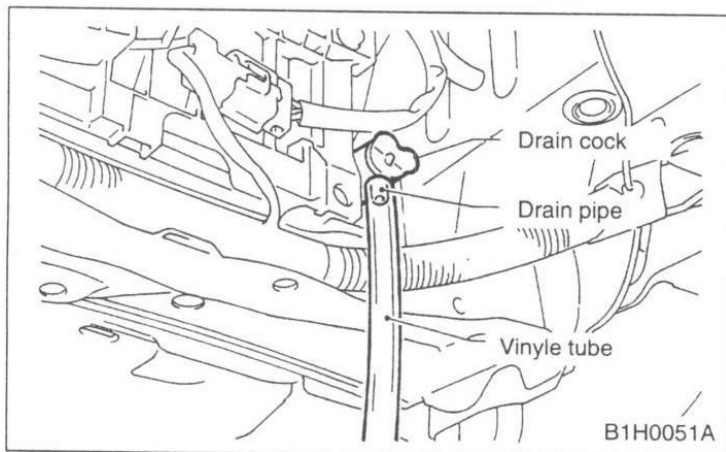
A: REPLACEMENT

1. REPLACEMENT OF COOLANT (NON-TURBO MODEL)

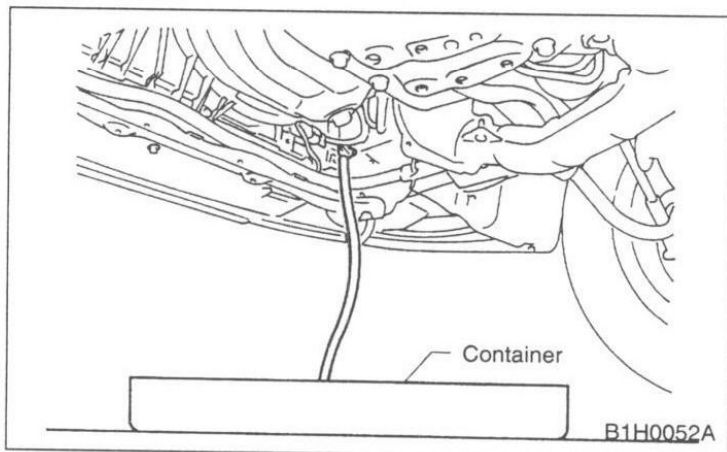
WARNING:

The radiator is of the pressurized type. Do not attempt to open the radiator cap immediately after the engine has been stopped.

- 1) Lift up the vehicle.
- 2) Remove under cover.



- 3) Fit vinyl tube to drain pipe.
- 4) Place a container under vinyl tube.



- 5) Loosen drain cock to drain engine coolant into container.
- 6) For quick draining, open radiator cap.

CAUTION:

Be careful not to spill coolant on the floor.

- 7) Drain coolant from reservoir tank.
- 8) Tighten radiator drain plug securely after draining coolant. (Drain tube may face downward.)

- 9) Install reservoir tank to original position.
- 10) Slowly pour prepared coolant from radiator filler port to neck of filler, then pour into reservoir tank up to "FULL" level.

Coolant capacity (fill up to "FULL" level)

1,600 cc:

Approx. 6.4 ℓ (6.8 US qt, 5.6 Imp qt)

1,800 cc:

Approx. 6.2 ℓ (6.6 US qt, 5.5 Imp qt)

2,000 cc:

Approx. 6.0 ℓ (6.3 US qt, 5.3 Imp qt)

CAUTION:

The SUBARU Genuine Coolant containing anti-freeze and anti-rust agents is especially made for SUBARU engine, which has an aluminum crankcase. Always use SUBARU Genuine Coolant, since other coolant may cause corrosion.

- 11) Securely install radiator cap.
- 12) Run engine for more than five minutes at 2,000 to 3,000 rpm. (Run engine until radiator becomes hot in order to purge air trapped in cooling system.)
- 13) Stop engine and wait until coolant temperature lowers. Then open radiator cap to check coolant level and add coolant up to radiator filler neck. Next, add coolant into reservoir tank up to "FULL" level.
- 14) After adding coolant, securely install radiator and reservoir tank caps.

2. REPLACEMENT OF COOLANT (TURBO MODEL)

- 1) Loosen radiator drain plug after following the same procedures 1) as described for the Non-TURBO model.
- 2) Loosen coolant flow tank cap to drain coolant.
- 3) Tighten radiator drain plug securely.
- 4) Slowly pour prepared coolant from coolant flow tank filler port up to the brim of port, and install cap, then pour coolant into reserve tank up to "FULL" level.
- 5) Run engine for about 15 minutes, not exceeding 2,000 rpm. (Run engine until radiator becomes hot in order to purge air trapped in cooling system.)
- 6) Stop engine and wait until coolant temperature lowers. [below 50°C (122°F) or 60°C (140°F)] Open coolant flow tank cap and add

coolant up to the brim of the port.

7) Wait until coolant temperature lowers further [below 30°C (86°F)], then pour into reserve tank up to the "FULL" level.

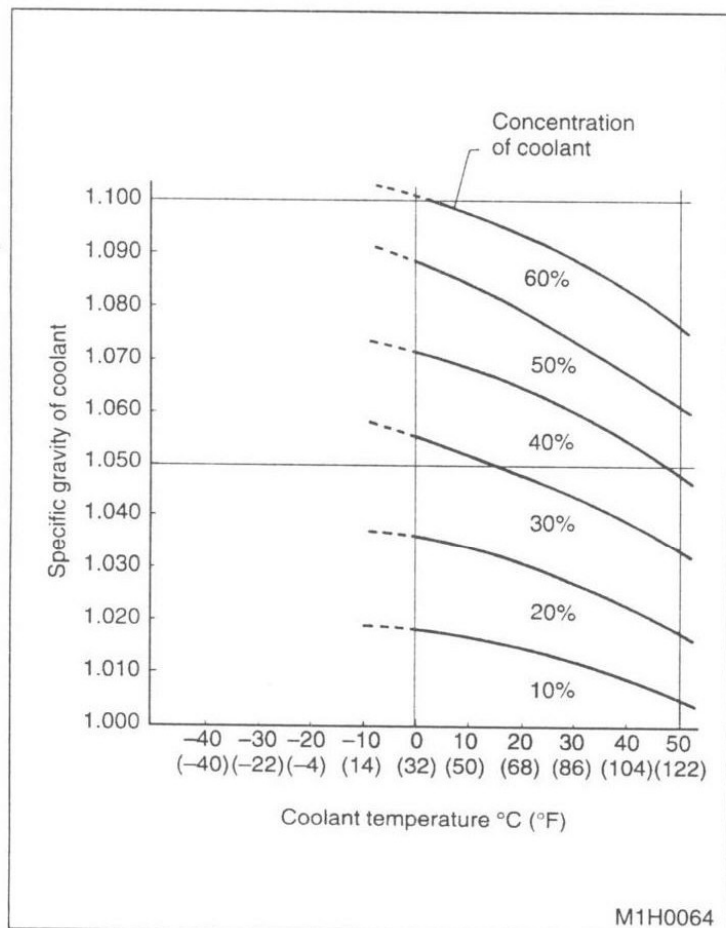
8) Run the vehicle until the coolant temperature rises to 80°C (176°F) and check the level in the coolant flow tank, add coolant up to the "FULL" level.

Coolant capacity (fill up to "FULL" level):

Approx. 7.2 ℓ (7.6 US qt, 6.3 Imp qt)

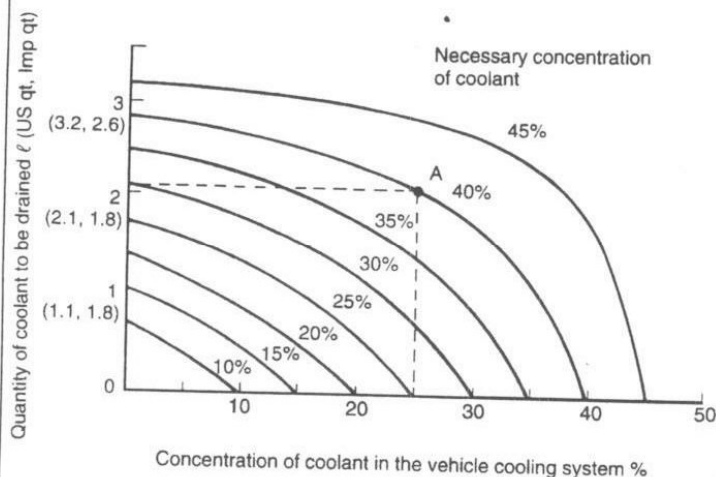
CAUTION:

The SUBARU Genuine Coolant containing anti-freeze and anti-rust agents is especially made for SUBARU engine, which has an aluminum crankcase. Always use SUBARU Genuine Coolant, since other coolant may cause corrosion.



3. RELATIONSHIP OF SUBARU COOLANT CONCENTRATION AND FREEZING TEMPERATURE

The concentration and safe operating temperature of the SUBARU coolant is shown in the diagram. Measuring the temperature and specific gravity of the coolant will provide this information.



M1H0065

4. PROCEDURE TO ADJUST THE CONCENTRATION OF THE COOLANT

To adjust the concentration of the coolant according to temperature, find the proper fluid concentration in the above diagram and replace the necessary amount of coolant with an undiluted solution of SUBARU genuine coolant (concentration 50).

The amount of coolant that should be replaced can be determined using the diagram.

[Example]

Assume that the coolant concentration must be increased from 25% to 40%. Find point A, where the 25% line of coolant concentration intersects with the 40% curve of the necessary coolant concentration, and read the scale on the vertical axis of the graph at height A. The quantity of coolant to be drained is 2.1 liters (2.2 US qt, 1.8 Imp qt). Drain 2.1 liters (2.2 US qt, 1.8 Imp qt) of coolant from the cooling system and add 2.1 liters (2.2 US qt, 1.8 Imp qt) of the undiluted solution of SUBARU coolant.

If a coolant concentration of 50% is needed, drain all the coolant and refill with the undiluted solution only.

Non-TURBO Model

Cap tester

H1H0472B

TURBO Model

Cap tester

H1H0480A

B: INSPECTION

1) Check radiator for leakage, filling it with coolant and attach radiator cap tester to the filler neck. Then apply a pressure of 157 kPa (1.6 kg/cm², 23 psi) and check the following points:

- Each portion of radiator for leakage
- Hose joints and other connections for leakage

CAUTION:

When attaching or detaching tester and when operating tester, use special care not to deform radiator filler neck.

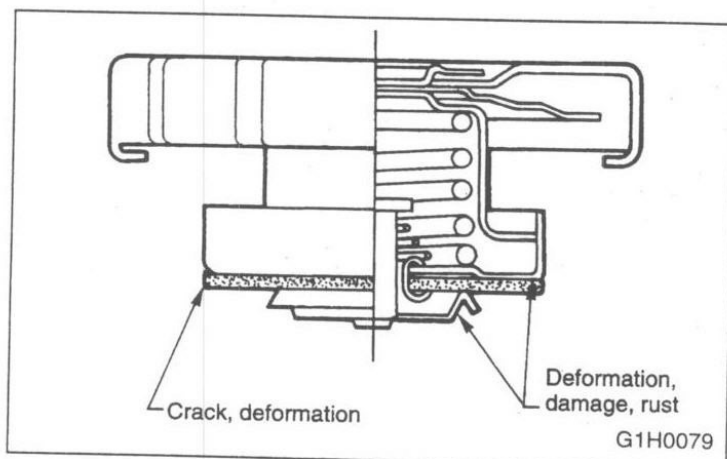
NOTE:

- When performing this check, be sure to keep the engine stationary and fill radiator with coolant.
- Wipe off check points before applying pressure.
- Use care not to spill coolant when detaching tester from radiator.

PERIODIC MAINTENANCE SERVICES

[05B0]

5. Replace Engine Coolant and Inspect Cooling System, Hoses and Connec



2) Check the radiator cap valve open pressure using radiator cap tester.

Raise the pressure until the needle of gauge stops and see if the pressure can be retained for five to six seconds. The radiator cap is not good if a pressure above the service limit value has been maintained for this period.

Radiator cap valve open pressure

Standard value:

78 — 98 kPa

(0.8 — 1.0 kg/cm², 11 — 14 psi)

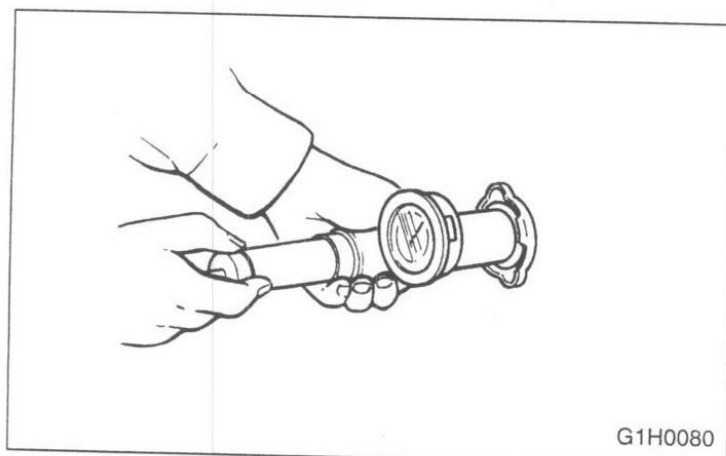
Service limit: 69 kPa (0.7 kg/cm², 10 psi)

CAUTION:

Rust or dirt on cap may prevent valve from functioning normally: be sure to clean cap before testing.

3) If the coolant temperature exceeds 76.0 to 80.0°C (169 to 176°F) while radiator is not hot, check thermostat. If thermostat does not open at 76.0 to 80.0°C (169 to 176°F), replace it with a new one.

4) If electric fan does not operate when coolant temperature exceeds 90 to 94°C (194 to 201°F), check thermostatic switch or fan motor.



6. Replace Fuel Filter and Inspect Fuel System, Lines and Connections

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
			P		P

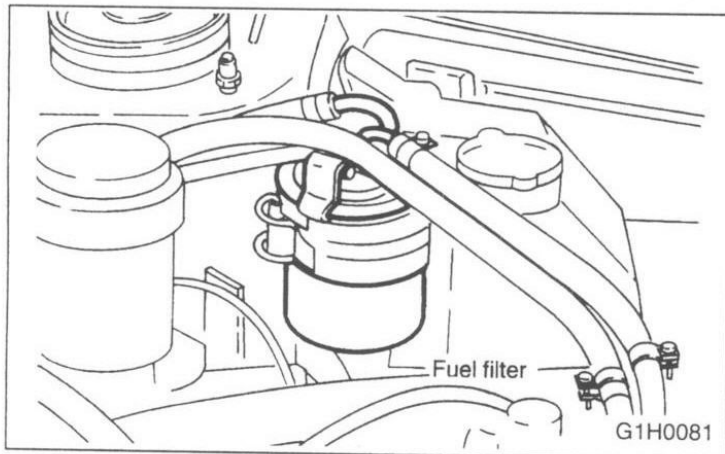
A: REPLACEMENT

WARNING:

- Place "No fire" signs near the working area.
- Disconnect ground cable from battery.

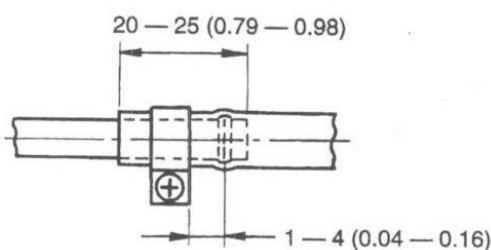
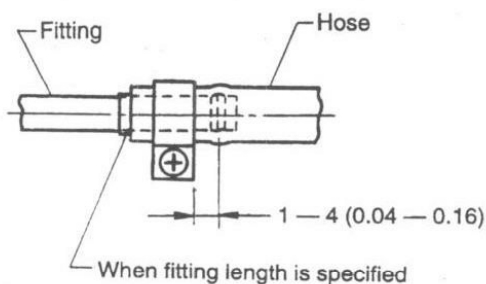
CAUTION:

Be careful not to spill fuel on the floor.



- 1) Before removing the hose, filter, pump, etc., be sure to release the fuel pressure, as follows:
 - Disconnect the wiring connector of the fuel pump.
 - Crank the engine for more than five seconds. If the engine starts, let the engine run until it stops.
 - After turning IG switch OFF, connect the wiring connector of the fuel pump.
- 2) Loosen the screw of the hose clamp and pull off the hose from the filter.
- 3) Remove the filter from the holder.

Unit: mm (in)



When fitting length is not specified

G1H0082

- 4) Replace fuel filter with a new one.
- 5) Install the hoses as shown in the figure.

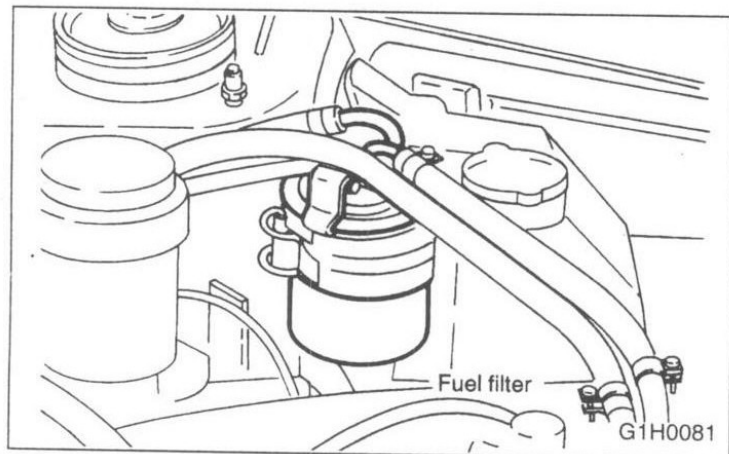
Tightening torque:

1.0 — 1.5 N.m

(0.1 — 0.15 kg-m, 0.7 — 1.1 ft-lb)

CAUTION:

- If the hose is damaged at the clamping portion, replace the hose with a new one.
- If the hose clamp is deformed too much, replace with a new one.
- Correct the hose position by removing any twist so that it will not interfere with the filter body or washer tank, before tightening the screw of the hose clamp.



G1H0081

- 6) Install the fuel filter bracket to the vehicle body. And tighten the bolts to the specified torque.

Tightening torque:

5.4 — 9.3 N.m

(0.55 — 0.95 kg-m, 4.0 — 6.9 ft-lb)

CAUTION:

Make sure that the clamp screw is not loose.

B: INSPECTION

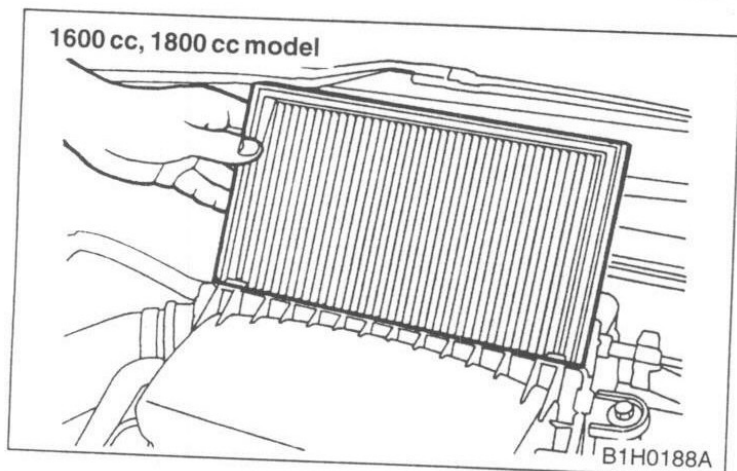
1. FUEL PIPING AND CONNECTIONS

Check fuel piping and connections for leakage, scratches, swelling and corrosion.

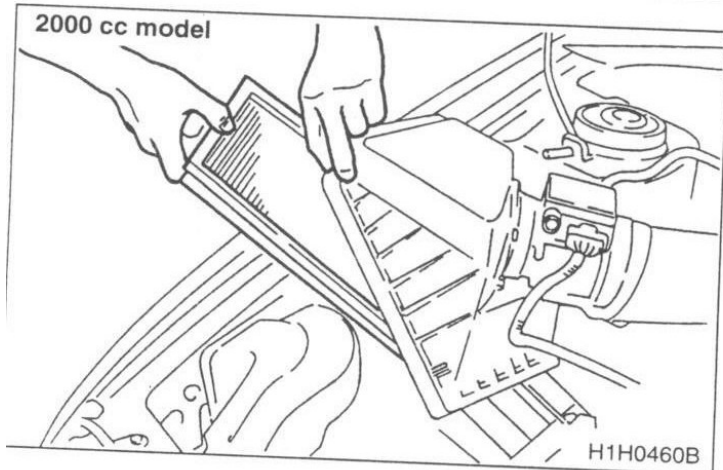
7. Air Cleaner Element

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
		I	R	I	R

1600 cc, 1800 cc model



2000 cc model

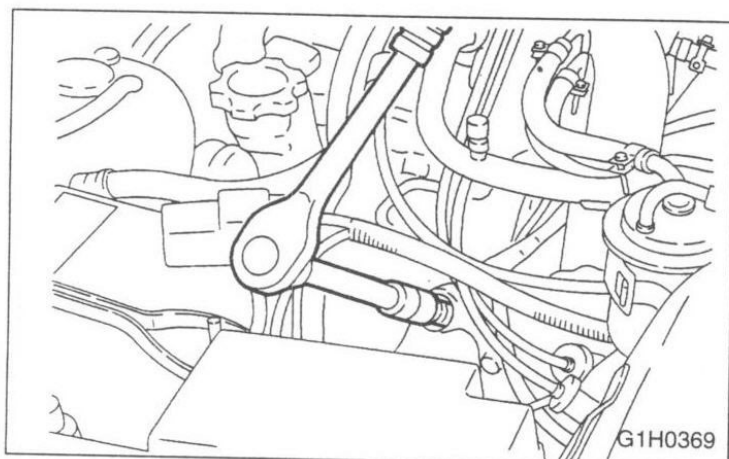


A: REPLACEMENT

Do not attempt to clean the air cleaner element. The filter paper of the element is wetted with a special non-inflammable slow-evaporating viscous liquid. It is resistant to cold weather and has a long service life. Dirt adhering to this filter paper forms porous laminations with the viscous liquid, which function as a filtration layer to reduce dust penetration into the filter paper. If this filter paper is cleaned, the filtration layer thus formed will be lost along with the viscous liquid.

8. Spark Plugs

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
For Non-Turbo		R	R	R	R
For Turbo					R



A: REPLACEMENT

1. NON-TURBO MODEL

- 1) Disconnect spark plug cord.
- 2) Remove spark plug with a plug-wrench.
- 3) Set new spark plug.
- 4) Tighten spark plug lightly with hand, and then secure with a plug-wrench to the specified torque.

Tightening torque:

$20.6 \pm 2.9 \text{ N.m}$

$(2.10 \pm 0.30 \text{ kg-m}, 15.19 \pm 2.14 \text{ ft-lb})$

CAUTION:

Be sure to place the gasket between the cylinder head and spark plug.

NOTE:

If torque wrench is not available, tighten spark plug until gasket contacts cylinder head; then tighten further 1/4 to 1/2 turns.

Recommended spark plug:

• With catalyst

NGK BKR6E-11

CHAMPION RC8YC4

(1600 cc and 1800 cc model)

CHAMPION RC10YC4 (2000 cc model)

Spark plug gap

1.0 — 1.1 mm (0.039 — 0.043 in)

• Without catalyst

NGK BKR6E

Spark plug gap

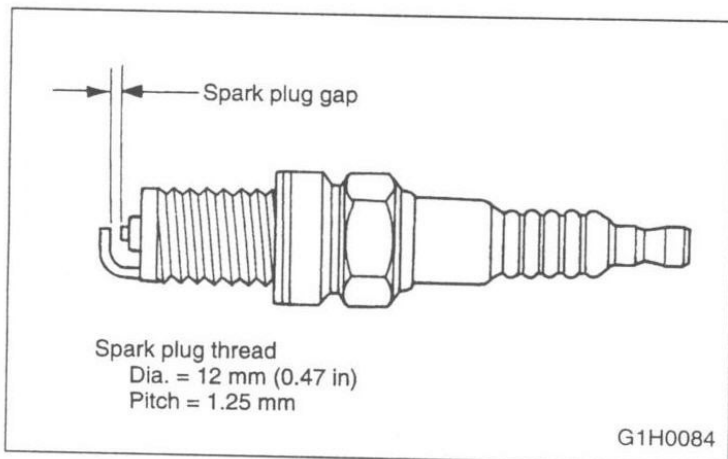
0.7 — 0.8 mm (0.028 — 0.031 in)

NOTE:

<Ref. to 6-1 [W3A0]>

2. TURBO MODEL

For the replacement procedures of the spark plugs on TURBO models, refer to 6-1 [W3D0].



9. Idle Mixture [Except for Catalyst Model]

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
	1	1	1	1	1

A: INSPECTION AND ADJUSTMENT

1. IDLE MIXTURE (Not necessary for catalytic converter equipped vehicle)

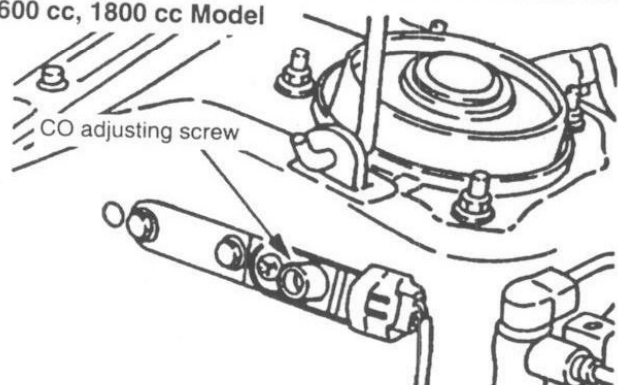
Before measuring the idle mixture, make sure that the ignition timing and the engine idle speed are within specifications.

- 1) Set the gear position at "Neutral" for MT, or "N" or "P" for AT.
- 2) Warm up engine sufficiently until cooling fan starts to operate.
- 3) Measure the idle mixture with the CO meter.

Engine idle speed	CO
1600 cc and 1800 cc model: 700 ± 100 rpm 2000 cc model: 800 ± 100 rpm	1.0 ± 0.5 %

- 4) If out of specification, adjust the idle mixture using CO adjusting screw of mass air flow sensor.
- 5) After adjusting the CO value, check and adjust increment coefficient of CO resistor by using Select Monitor.

1600 cc, 1800 cc Model

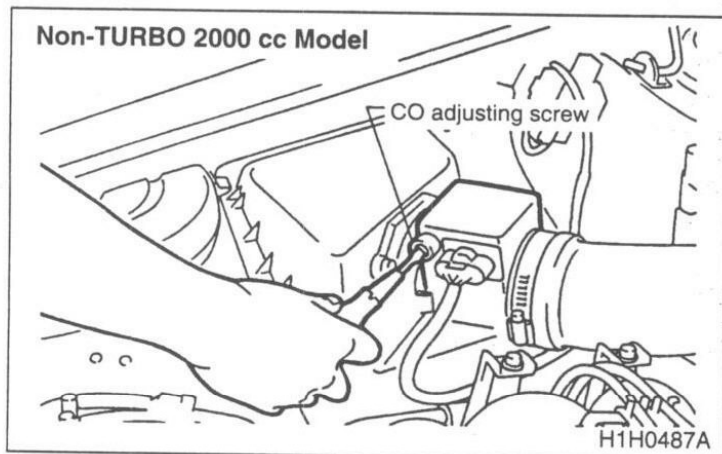


H1H0481A

1600 cc and 1800 cc model:
<Ref. to "Troubleshooting Section" 2-7a [T11P0] or [T12P0]>

- (1) Select function mode "F25".
- (2) If out of specified data, adjust the increment coefficient of CO resistor while rotating CO adjusting screw.

Specified data: 0.28 to 4.22 V



Non-TURBO 2000 cc model:

<Ref. to "Troubleshooting Section" 2-7b [T11P0] or [T12Q0]>

- (1) Select function mode "F25".
- (2) If out of specified data, adjust the increment coefficient of CO resistor while rotating CO adjusting screw.

Specified data: -1.52 to $+1.49$ kg/h

NOTE:

If driving the vehicle on out of specified data, the "trouble code 49" is indicated in many case.

10. Transmission/Differential (Front and rear) Lubricants (Gear oil)

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
			R		R

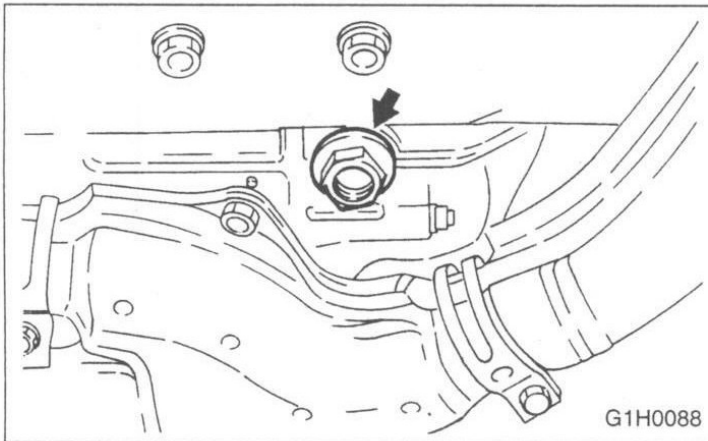
A: REPLACEMENT

1. MANUAL TRANSMISSION

1) Drain gear oil by removing drain plug after allowing the engine to cool for 3 to 4 hours.

CAUTION:

Before starting work, cool off the engine well.



2) Reinstall drain plug after draining gear oil and tighten it to the specified torque.

Tightening torque:

41 — 47 N.m (4.2 — 4.8 kg-m, 30 — 35 ft-lb)

CAUTION:

- Be sure to place a gasket between the transmission case and drain plug.
- Replace the gasket with a new one.

NOTE:

Inspect the transmission gear oil level. If the oil level is at the lower point or below, add some oil through the oil level gauge hole up to the upper point of gauge.

Gear oil capacity:

FWD model: 3.3 ℓ (3.5 US qt, 2.9 Imp qt)

AWD Non turbo single range model:

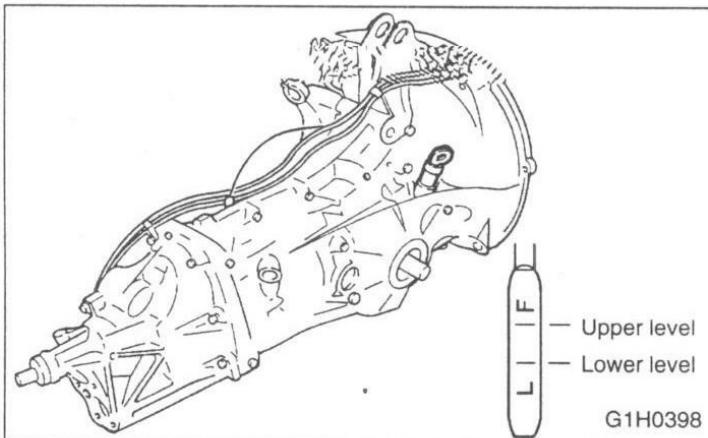
3.5 ℓ (3.7 US qt, 3.1 Imp qt)

AWD dual range model:

4.0 ℓ (4.2 US qt, 3.5 Imp qt)

AWD Turbo model:

4.0 ℓ (4.2 US qt, 3.5 Imp qt)

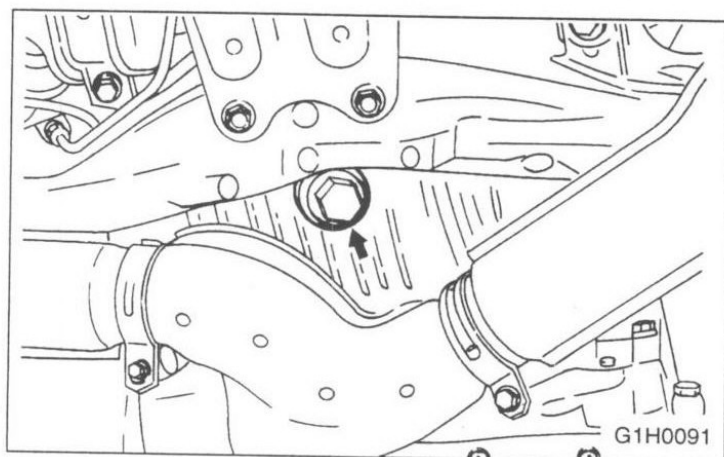


ITEM					
• Transmission gear oil					
API Classification					
GL-5					
SAE Viscosity No. and Applicable Temperature					
(°F)	-30	0	32	60	90
(°C)	-34	-18	0	16	32
G1H0392					

• Recommended oil

CAUTION:

Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

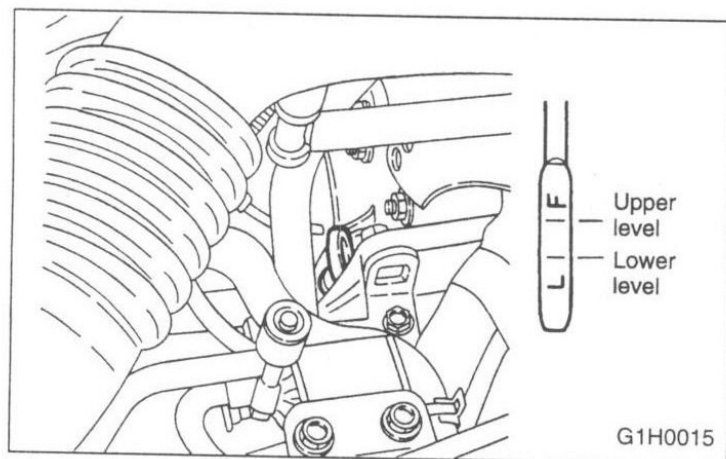


2. FRONT DIFFERENTIAL (AUTOMATIC TRANSMISSION)

1) Drain differential gear oil by removing drain plug after allowing the engine to cool for 3 to 4 hours.

CAUTION:

Before starting work, cool off the engine well.



2) Reinstall drain plug after draining differential gear oil and tighten in to the specified torque.

Tightening torque:

41.2 — 47.1 N.m

(4.2 — 4.8 kg-m, 30.4 — 34.7 ft-lb)

CAUTION:

- Be sure to place a gasket between the transmission case and drain plug.
- Replace the gasket with a new one.

3) Fill differential gear oil through the oil level gauge hole up to upper point level gauge.

Differential gear oil capacity:

1.1 — 1.3 ℓ

(1.2 — 1.4 US qt, 1.0 — 1.1 Imp qt)

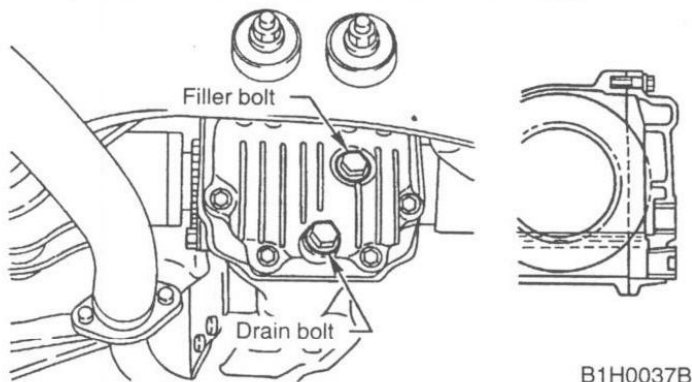
• Recommended front differential gear oil

CAUTION

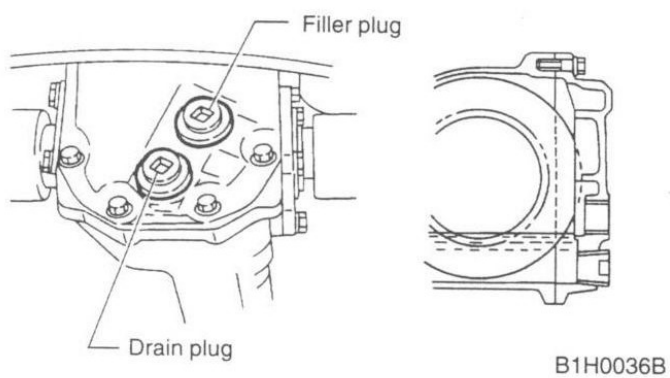
Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

ITEM									
• Front differential gear oil									
API Classification									
GL - 5									
SAE Viscosity No. and Applicable Temperature									
(°C)	-30	-26	-15	-5	0	15	25	30	
(°F)	-22	-15	5	23	32	59	77	86	
B1H0039									

Except 2000 cc Non-turbo MT and Turbo model



2000 cc Non-turbo MT and Turbo model

**3. REAR DIFFERENTIAL (AWD MODEL)**

- 1) Drain oil by removing drain bolt or plug.
- 2) Remove filler bolt or plug for quick draining oil.
- 3) Tighten drain bolt or plug after draining oil.

CAUTION:

- Except 2000 cc Non-turbo MT and Turbo model

Always use a new aluminum gasket.

Tightening torque: $34 \pm 4 \text{ N.m}$ ($3.5 \pm 0.4 \text{ kg-m}$, $25.3 \pm 2.9 \text{ ft-lb}$)

- 2000 cc Non-turbo MT and Turbo model

Apply fluid packing to drain plug threads before installation.

Fluid packing:*Three Bond 1205 or equivalent***Tightening torque:** $49 \pm 9.8 \text{ N.m}$ ($5 \pm 1 \text{ kg-m}$, $36 \pm 7.2 \text{ ft-lb}$)

- 4) After installing drain bolt or plug onto rear differential gear case firmly, fill oil up fully to the mouth of filler bolt or plug.

Oil capacity: 0.8 l (0.8 US qt , 0.7 Imp qt)

- 5) Install filler bolt or plug onto rear differential gear case firmly.

CAUTION:

- Non-Turbo model

Always use a new aluminum gasket.

Tightening torque: $34 \pm 4 \text{ N.m}$ ($3.5 \pm 0.4 \text{ kg-m}$, $25.3 \pm 2.9 \text{ ft-lb}$)

- Turbo model

Apply fluid packing to filler plug threads before installation.

Fluid packing:*Three Bond 1205 or equivalent***Tightening torque:** $49 \pm 9.8 \text{ N.m}$ ($5 \pm 1 \text{ kg-m}$, $36 \pm 7.2 \text{ ft-lb}$)

- Recommended rear differential gear oil

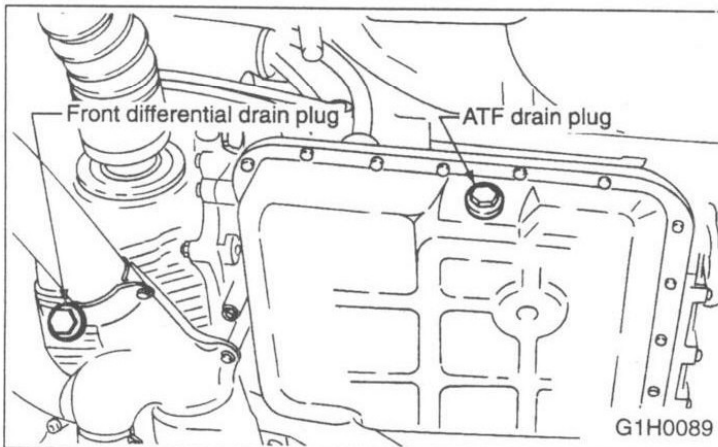
CAUTION:

Each oil manufacturer has its base oil and additives. Thus, do not mix two or more brands.

ITEM					
• Rear differential gear oil					
API Classification					
GL-5					
SAE Viscosity No. and Applicable Temperature					
(°F)	-30	0	32	60	90
(°C)	-34	-18	0	16	32
H1H0442					

11. Automatic Transmission Fluid

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	4
x1,000 km	1.6	25	50	75	10
x1,000 miles	1	15	30	45	6
			R		F



A: REPLACEMENT

- 1) Drain ATF (Automatic Transmission Fluid) removing drain plug after allowing the engine to cool for 3 to 4 hours.
- 2) Reinstall drain plug after draining ATF, and tighten it to the specified torque.

Tightening torque:

25 N.m (2.5 kg-m, 18 ft-lb)

CAUTION:

Before starting work, cool off the engine well.

- 3) Fill ATF up to the middle of the "COOL" section on level gauge by using the gauge hole.

Fluid capacity (Non-turbo model):

7.9 — 8.2 ℓ

(8.4 — 8.7 US qt, 7.0 — 7.2 Imp qt)

Fluid capacity (Turbo model):

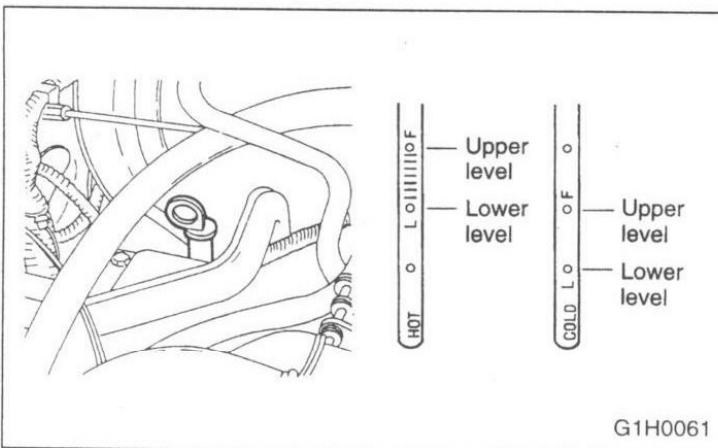
9.5 — 9.8 ℓ

(10.0 — 10.4 US qt, 8.4 — 8.6 Imp qt)

- 4) Run the vehicle until the ATF temperature rises to 60 to 80°C (140 to 176°F) and check ATF level.

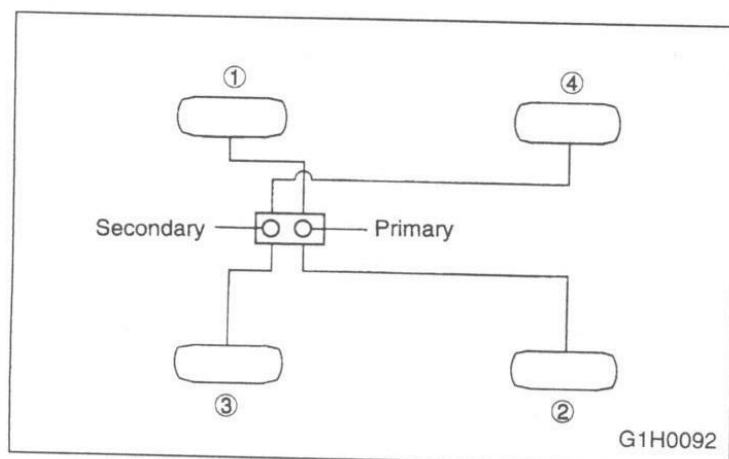
Recommended automatic

transmission fluid: Dexron II or III



12. Brake Fluid

MAINTENANCE INTERVAL [Number of months or km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
			R		R



A: REPLACEMENT

- 1) Either jack up vehicle and place a safety stand under it, or lift up vehicle.
- 2) Remove both front and rear wheels.
- 3) Draw out the brake fluid from master cylinder with syringe.
- 4) Refill reservoir tank with recommended brake fluid.

Recommended brake fluid:

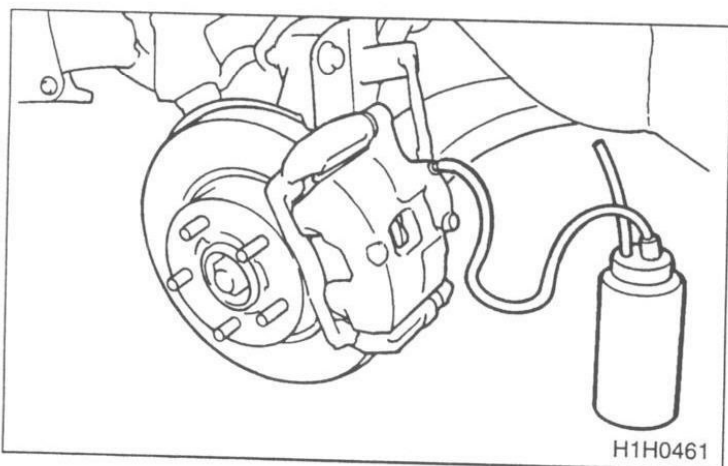
FMVSS No. 116, fresh DOT3 or 4 brake fluid

CAUTION:

- Avoid mixing different brands of brake fluid to prevent degrading the quality of the fluid.
- Be careful not to allow dirt or dust to get into the reservoir tank.

Bleeding sequence ① → ② → ③ → ④

- | | |
|---------------|--------------|
| ① Front right | ③ Front left |
| ② Rear left | ④ Rear right |



- 5) Install one end of a vinyl tube onto the air bleeder and insert the other end of the tube into a container to collect the brake fluid.

NOTE:

- Cover bleeder with waste cloth, when loosening it, to prevent brake fluid from being splashed over surrounding parts.
- During bleeding operation, keep the brake reserve tank filled with brake fluid to eliminate entry of air.
- Brake pedal operation must be very slow.

- For convenience and safety, it is advisable to have two men working.
- The amount of brake fluid required is approximately 500 ml (16.9 US fl oz, 17.6 Imp fl oz) for total brake system.

6) Instruct your co-worker to depress the brake pedal slowly two or three times and then hold it depressed.

7) Loosen bleeder screw approximately 1/4 turn until a small amount of brake fluid drains into container, and then quickly tighten screw.

8) Repeat steps 6) and 7) above until there are no air bubbles in drained brake fluid and new fluid flows through vinyl tube.

NOTE:

Add brake fluid as necessary while performing the air bleed operation, in order to prevent the tank from running short of brake fluid.

9) After completing the bleeding operation, hold brake pedal depressed and tighten screw and install bleeder cap.

Tightening torque:

8 ± 1 N.m (0.8 ± 0.1 kg-m, 5.8 ± 0.7 ft-lb)

10) Bleed air from each wheel cylinder using the same procedures as described in steps 5) through 9) above.

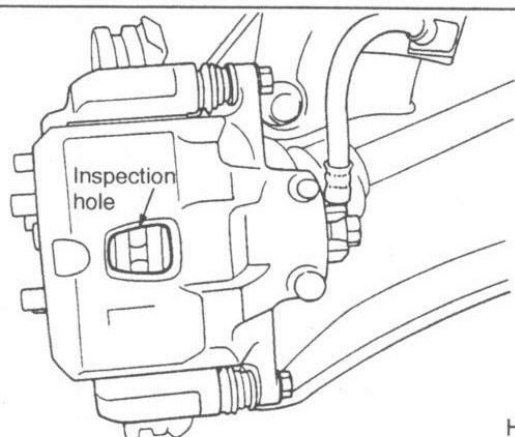
11) Depress brake pedal with a force of approximately 294 N (30 kg, 66 lb) and hold it there for approximately 20 seconds. At this time check pedal to see if it makes any unusual movement. Visually inspect bleeder screws and brake pipe joints to make sure that there is no fluid leakage.

12) Install wheels, and drive car for a short distance between 2 to 3 km (1 to 2 miles) to make sure that brakes are operating properly.

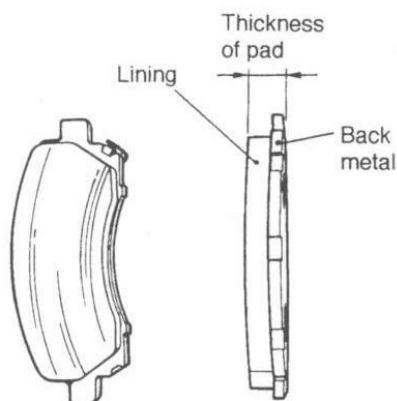
13. Disc Brake Pads and Discs/Front and Rear Axle Boots and Axle Shaft Joint Portions

MAINTENANCE INTERVAL
[Number of months of km (miles) whichever occurs first]

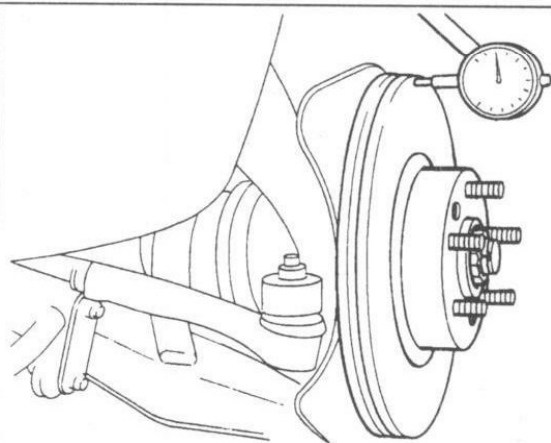
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60



H1H0463A



H1H0464A



G1H0097

A: INSPECTION

1. DISC BRAKE PAD AND DISC

- 1) Jack up vehicle and support with rigid racks. Then remove wheels.
- 2) Visually check pad thickness through inspection hole of disc brake assembly. Replace pad if necessary.

Pad thickness including back metal mm (in)

	Front	Rear
Standard	17 (0.67)	15 (0.59)
Service limit	7.5 (0.295)	6.5 (0.256)
Service limit (exclude back metal)	1.5 (0.059)	1.5 (0.059)

- 3) Check the disc rotor, and correct or replace if it is damaged or worn.

Brake disc thickness mm (in)

	Front		Rear
	15" & 14"	13"	
Standard	24 (0.94)	18 (0.71)	10 (0.39)
Wear limit	22 (0.87)	16 (0.63)	8.5 (0.335)

Measure the disc rotor runout at a point less than 5 mm (0.20 in) from the outer periphery of the rotor.

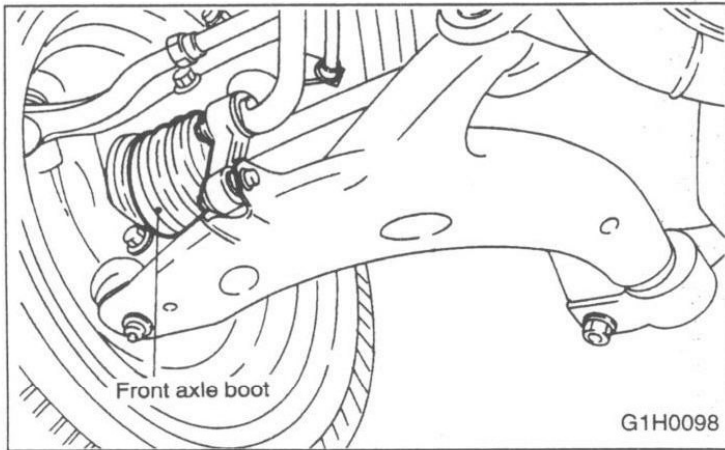
Disc rotor runout limit:

Front: 0.075 mm (0.00295 in)

Rear: 0.100 mm (0.00394 in)

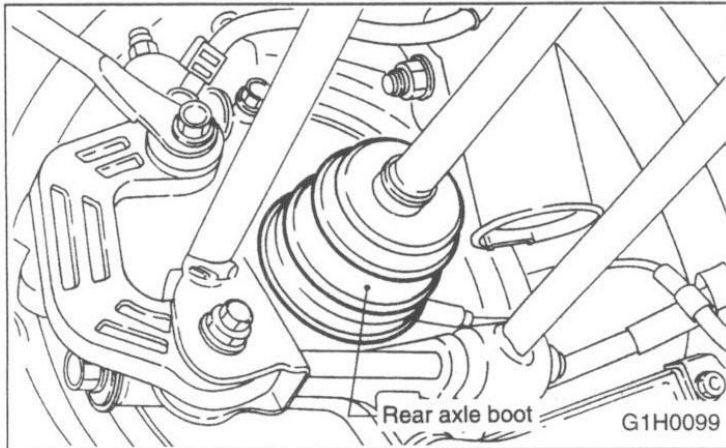
CAUTION:

When replacing a pad, always replace the pads for both the left and right wheels at the same time. Also replace pad clips if they are twisted or worn.



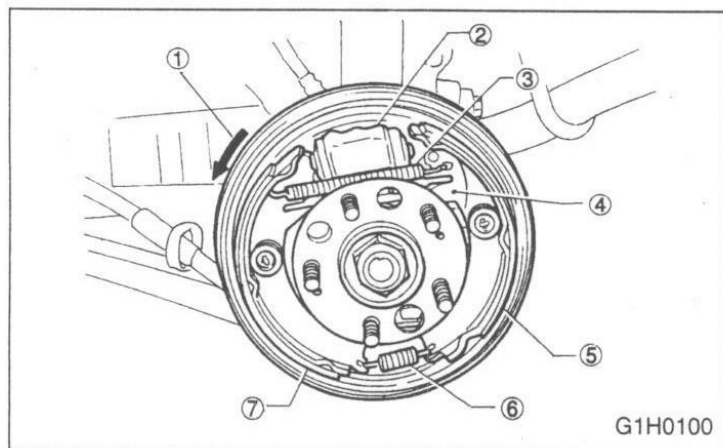
2. FRONT AND REAR AXLE BOOTS

Inspect front and rear axle boots for deformation, damage or failure. If faulty, replace them with new ones.



14. Brake Linings and Drums

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
			I		I



A: INSPECTION

1. REAR DRUM BRAKE

- 1) Remove brake drum, and check that there is no fluid leakage from wheel cylinder. If there is fluid leakage from wheel cylinder, replace it.
- 2) Inspect brake shoes for damage or deformities and check brake linings for wear.

- ① Rotational direction of drum (Forward)
- ② Wheel cylinder
- ③ Upper shoe return spring
- ④ Adjusting lever
- ⑤ Trailing shoe
- ⑥ Lower shoe return spring
- ⑦ Leading shoe

CAUTION:

- Always replace both leading and trailing brake shoes for the left and right wheels at the same time.
- When either the left or the right brake assembly is replaced, always replace the leading shoe and trailing shoe of the other.
- The cotter pin, once removed, cannot be reused.

Thickness of lining (except back metal)

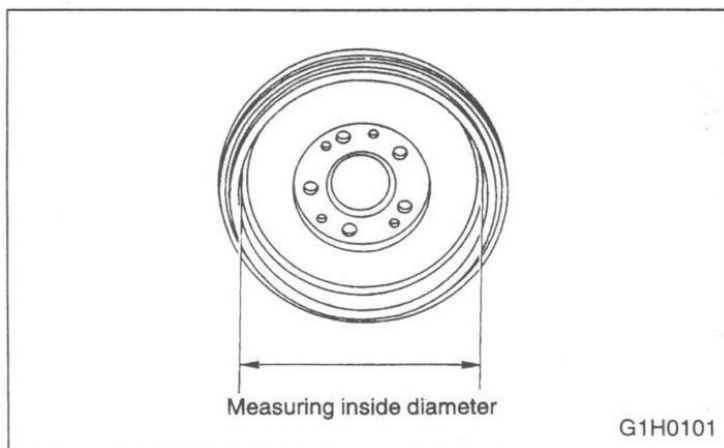
Standard value: 4.1 mm (0.161 in)

Service limit: 1.5 mm (0.059 in)

To replace trailing shoe, remove cotter pin. Clevis pin should also be replaced if worn.

- 3) Check brake drum for wear, dents or other damage.

If the inside surface of brake drum is streaked, correct the surface with emery cloth (#200 or more). If it is unevenly worn, tapered, or the outside surface of brake drum is damaged, correct or replace it.

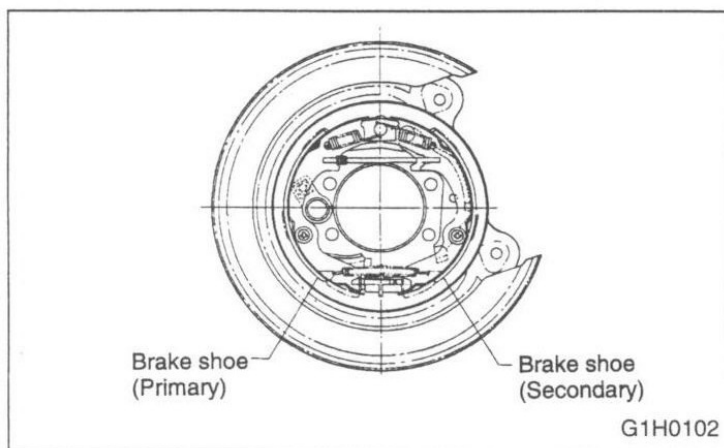


Brake drum inner diameter

Standard value: 228.6 mm (9.000 in)

Service limit: 230.6 mm (9.079 in)

If deformation or wear of back plate, shoe, etc. is noticeable, replace the affected parts.



2. PARKING BRAKE

Inspect brake linings and drums of both sides of the rear brake at the same time by removing brake drums.

1) Inspect brake shoes for damage or deformation and check brake linings for wear.

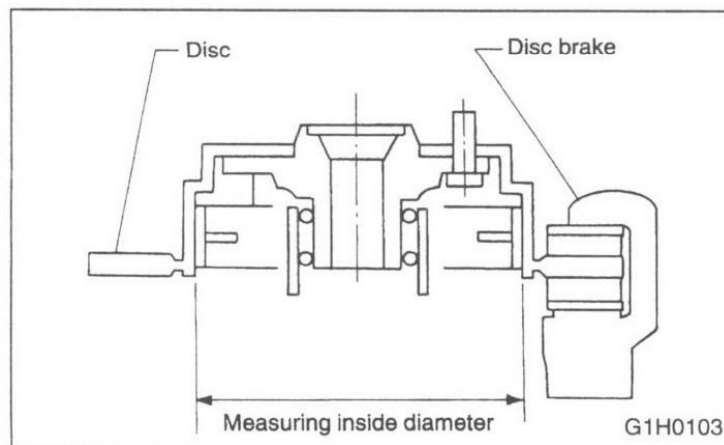
CAUTION:

Always replace both primary and secondary brake shoes for the left and right wheels at the same time.

Brake lining thickness excluding back metal

Standard value: 3.2 mm (0.126 in)

Wear limit: 1.5 mm (0.059 in)



2) Check brake drum for wear, dents or other damage. If the inside surface of brake drum is streaked, correct the surface with emery cloth (#200 or more). If it is unevenly worn, tapered or the outside surface of brake drum is damaged, correct or replace it.

Brake drum inside diameter

Standard value: 170 mm (6.69 in)

Wear limit: 171 mm (6.73 in)

- 3) If the deformation or wear of back plate, shoe, etc. is noticeable, replace them.
- 4) When the shoe return spring tension is excessively weakened, replace it, taking care to identify upper and lower springs.

B: ADJUSTMENT

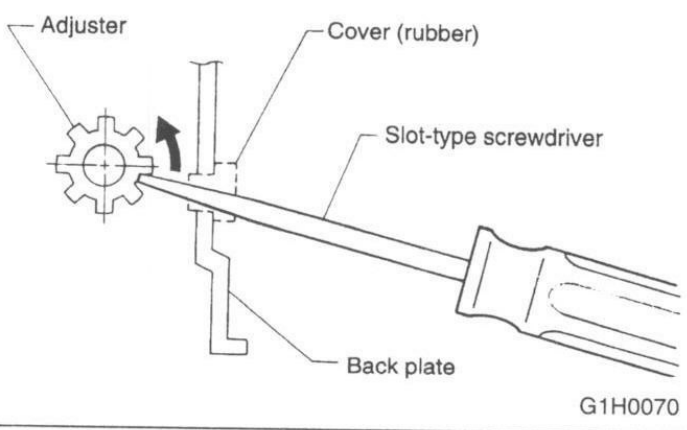
1. REAR DRUM BRAKE

The main brake is adjusted automatically, and so there is no need to adjust it.

2. PARKING BRAKE

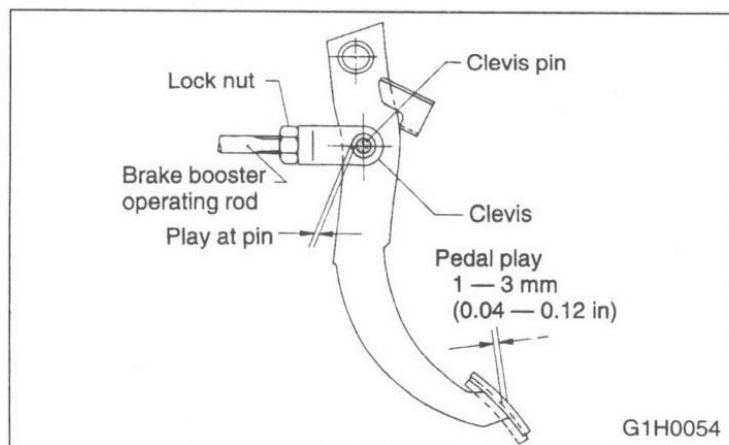
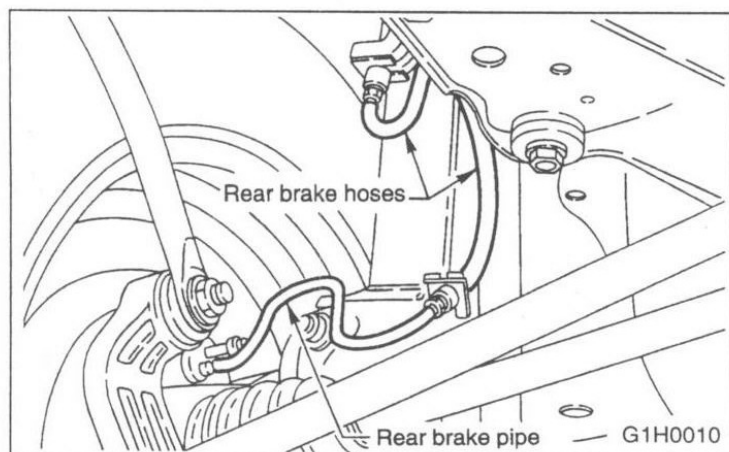
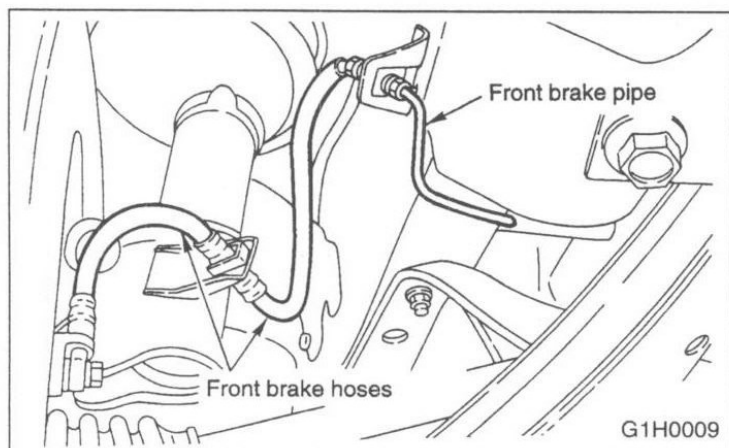
For rear disc brake, adjust parking brake after bleeding the air.

- 1) Remove rear cover (rubber) installed at back plate.
- 2) Turn adjuster toward arrow mark (upward) until it is locked slightly, by using slot-type screwdriver as shown in illustration.
- 3) Turn back (downward) adjuster 3 to 4 notches.
- 4) Install cover (rubber) at original position correctly.



15. Inspect Brake Lines and Check Operation of Parking and Service Brake System

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
		P	P	P	P



A: INSPECTION

1. BRAKE LINE

- 1) Check scratches, swelling, corrosion and/or traces of fluid leakage on brake hoses or pipe joints.
- 2) Check the possibility of adjacent parts interfering with brake pipes/hoses during driving, and loose connections/clamps.
- 3) Check any trace of fluid leakage, scratches, etc. on master cylinder, wheel cylinder, pressure control valve and hill-holder.

NOTE:

When the brake fluid level in the reservoir tank is lower than the specified limit, the brake fluid warning light on the combination meter will come on.

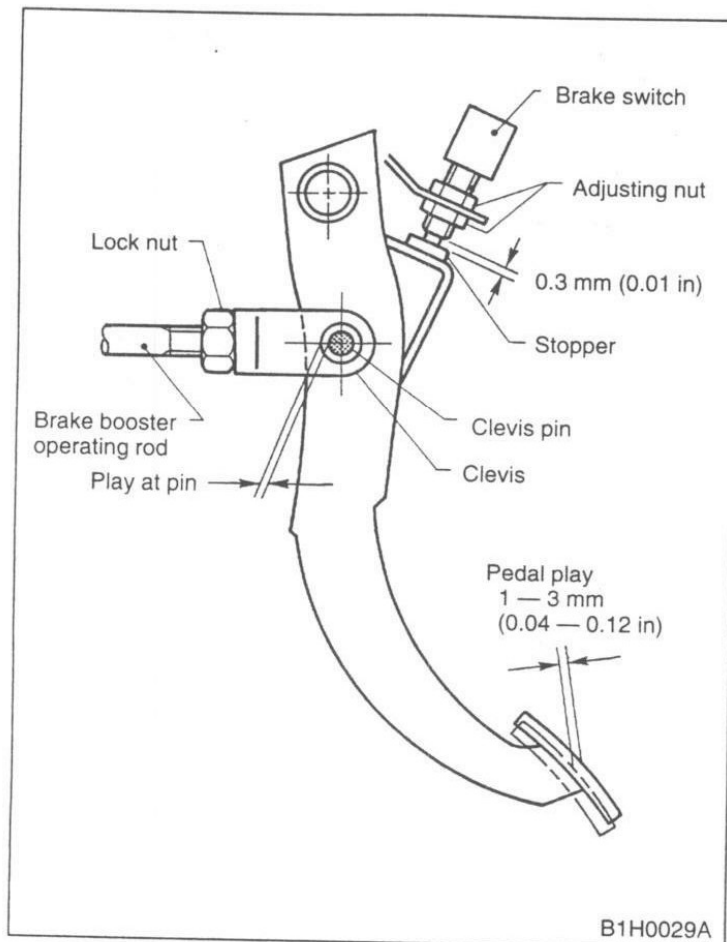
B: CHECKING

1. SERVICE BRAKE

- 1) Check the free play of brake pedal with a force of less than 10 N (1 kg, 2 lb).

Brake pedal free play:

1 — 3 mm (0.04 — 0.12 in)



If the free play is out of specifications above, adjust the brake pedal as follows:

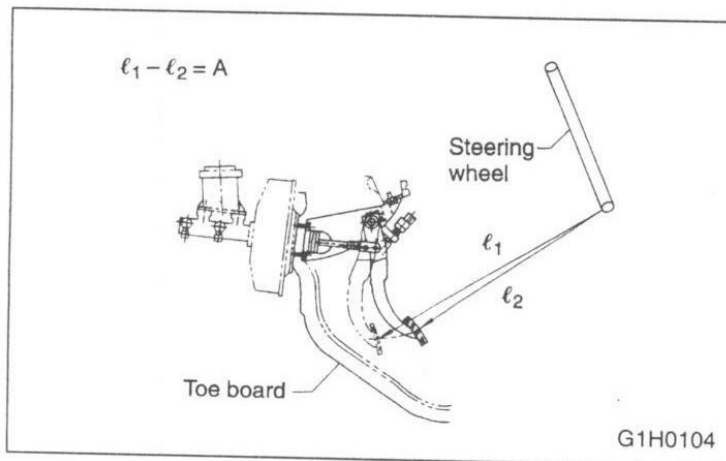
(1) Be sure engine is off. (No vacuum is applied to brake booster.)

(2) There should be play between brake booster clevis and pin at brake pedal installing portion.

[Depress brake pedal pad with a force of less than 10 N (1 kg, 2 lb) to a stroke of 1 to 3 mm (0.04 to 0.12 in).]

(3) Depress the surface of brake pad by hand.

(4) If there is no free play between clevis pin and clevis, turn brake switch adjusting nut until the clearance between stopper and screw of brake switch becomes 0.3 mm (0.01 in).



2) Check the pedal stroke.

While the engine is idling, depress the brake pedal with a 490 N (50 kg, 110 lb) load and measure the distance between the brake pedal and steering wheel. With the brake pedal released, measure the distance between the pedal and steering wheel again. The difference between the two measurements must be less than 90 mm (3.54 in) [with ABS, 95 mm (3.74 in)]. If the distance is more than specified, there is a possibility air is in the inside of the hydraulic unit.

Brake pedal reserve distance: A

With ABS

more than 95 mm (3.74 in)/

490 N (50 kg, 110 lb)

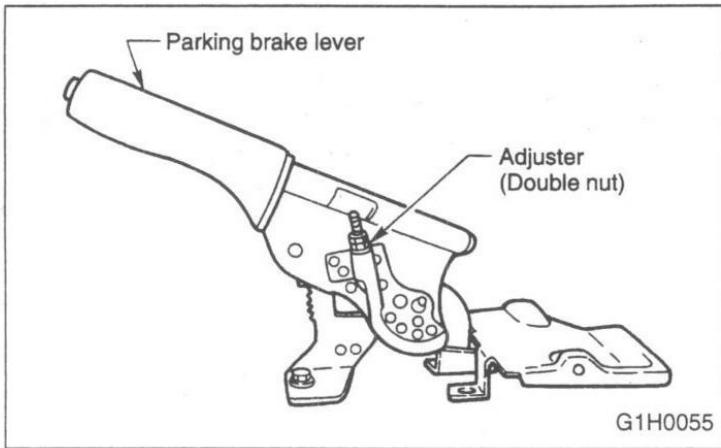
Without ABS

more than 90 mm (3.54 in)/

490 N (50 kg, 110 lb)

3) Check to see if air is in the hydraulic brake line by the feel of pedal operation. If air appears to exist in the line, bleed it from the system.

4) Check for even operation of all brakes, using a brake tester or by driving the vehicle for a short distance on a straight road.



2. PARKING BRAKE SYSTEM

1) Operation of parking brake is normal if is applied at sixth notch of ratchet when brake lever is pulled by force of about 196 N (20 kg, 44 lb). Total number of the notches is 21.

Parking brake lever stroke:

7 to 8th notch/196 N (20 kg, 44 lb)

- 2) Parking brake should be adjusted after adjusting the shoe clearance of rear brakes.
- 3) Remove rear console cover.
- 4) Adjust parking brake lever by turning adjuster (double nut) until parking brake lever stroke is set at 7 to 8 notches with operating force of 196 N (20 kg, 44 lb).

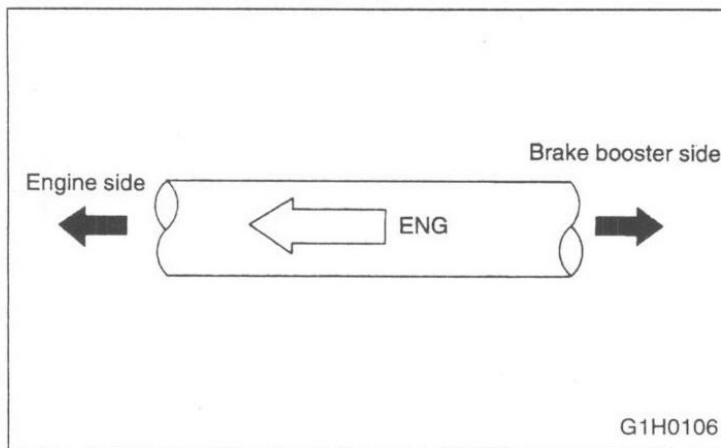
3. BRAKE SERVO SYSTEM

- 1) With the engine off, depress the brake pedal several times applying the same pedal force: Make sure the travel distance should not change.
- 2) With the brake pedal depressed, start the engine: Make sure the pedal should move slightly toward the floor.
- 3) With the brake pedal depressed, stop the engine and keep the pedal depressed for 30 seconds: Make sure the pedal height should not change.
- 4) Check valve is built into vacuum hose. Disconnect vacuum hose to inspect function of check valve. Blow air into vacuum hose from its brake booster side end: Air must flow out of engine side end of hose. Next blow air into hose from engine side: Air should not flow out of hose. Replace both check valve and vacuum hose if check valve is faulty. Engine side of vacuum hose is indicated by marking "ENGINE" as shown.
- 5) Check vacuum hose for cracks or other damage.

NOTE:

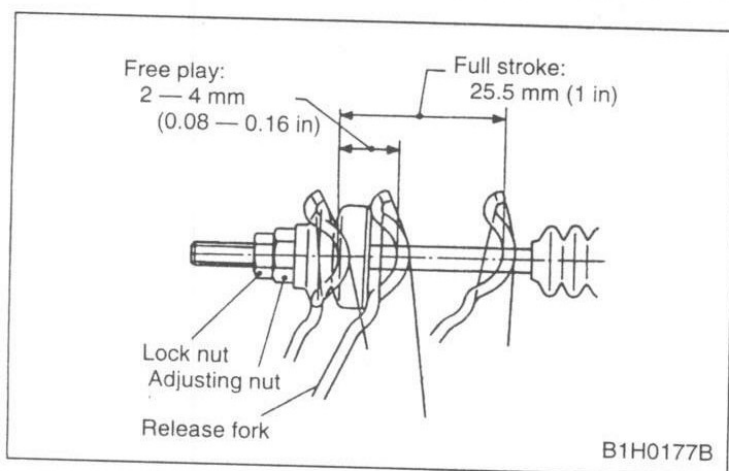
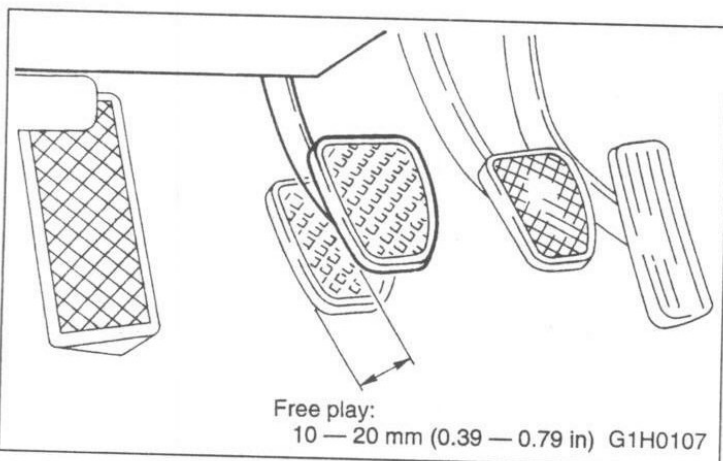
When installing the vacuum hose on the engine and brake booster, do not use soapy water or lubricating oil on their connections.

- 6) Check vacuum hose to make sure it is tight and secure.



16. Clutch and Hill-holder System

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60



A: INSPECTION AND ADJUSTMENT

1. MECHANICAL CLUTCH TYPE

1) Inspect free play of clutch pedal by operating pedal by hand.

If it is out of the specified value, adjust it by turning wing nut on engine side of clutch cable at release fork.

Tightening torque

(Adjusting nut on release fork):

$6 \pm 1.5 \text{ N.m}$

$(0.61 \pm 0.15 \text{ kg-m}, 4.4 \pm 1.1 \text{ ft-lb})$

Standard free play:

At clutch pedal

$10 - 20 \text{ mm (0.39 - 0.79 in)}$

Fork lever free play allowance:

$2 - 4 \text{ mm (0.08 - 0.16 in)}$

NOTE:

When replacing clutch cable with new one and/or marking free play adjustment of clutch pedal, make adjustment of hill-holder system without fail as follows.

After replacing clutch cable [and/or pressure hold valve (PHV) cable] with a new one, depress clutch pedal about thirty (30) times as a running-in operation prior to this adjustment.

2) Pedal-to-floor plate gap in disengaged position

(1) With the engine idling, pull parking brake lever completely.

(2) Slowly depress clutch pedal while moving shift lever into reverse.

(3) Stop depressing clutch pedal when gearshifting is complete. With clutch pedal in this position, measure the distance between the upper side of pedal pad and the

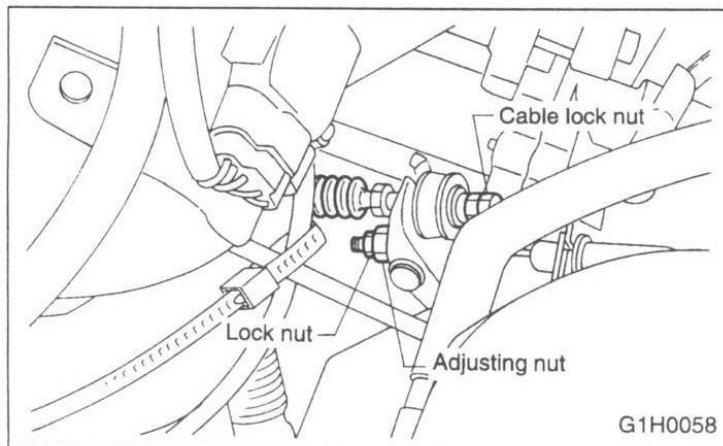
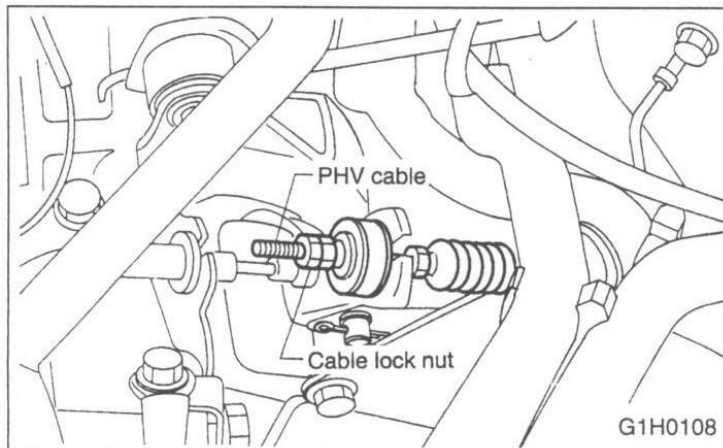
lower end of front panel (intersection of front panel with floor). Check that the measured value is within the specified standard.

Standard:

80 mm (3.15 in) or more

3) Pedal height

Check that the clutch pedal pad surface is level with or higher than brake pedal pad surface.



2. HILL-HOLDER

1) Confirm stopping and starting performance by activating hill-holder on an uphill road of 3° or higher inclination.

CAUTION:

(1) If vehicle does not stop;
Tighten adjusting nut of PHV cable.

(2) If vehicle does not start properly;

- Case A – When hill-holder is released later than engagement of clutch (engine tends to stall):

Loosen adjusting nut gradually until smooth starting is enabled.

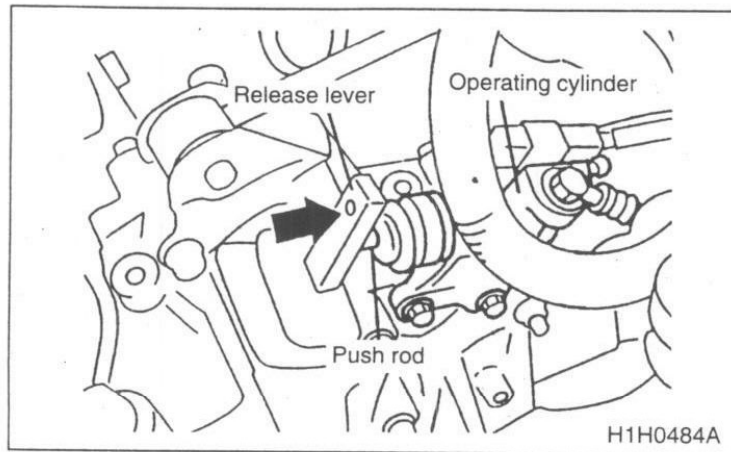
- Case B – When hill-holder is released earlier than engagement to clutch (vehicle slips down slightly):

Tighten adjusting nut so that hill-holder is released later than engagement of clutch (status in Case A).

Then make adjustment the same as in Case A.

NOTE:

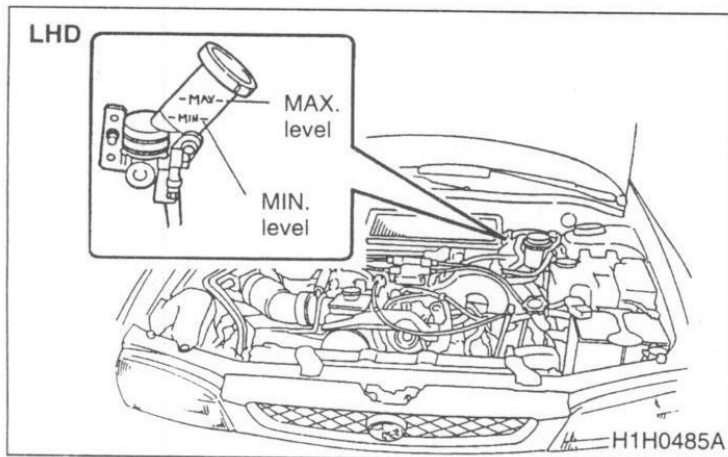
- Whenever turning adjusting nut, hold inner cable with pliers to prevent it from turning.
- Replace pressure hold valve (PHV), return spring of PHV or PHV cable with new one, if they are defective and/or damaged.



3. HYDRAULIC CLUTCH TYPE

- 1) Push the release fork to retract the push rod of the operating cylinder and check if the fluid level in the clutch reservoir tank rises or not.
- 2) If the fluid level rises, pedal free play is correct.
- 3) If the fluid level does not rise, or the push rod cannot be retracted, adjust the clutch pedal. <Ref. to 4-5 [W1F1]>
- 4) Inspect the underside of master cylinder, clutch damper and operating cylinder for clutch system, hoses, piping and their couplings for fluid leaks.

If fluid leaks are found, correct them by retightening their fitting bolt and/or replacing their parts.



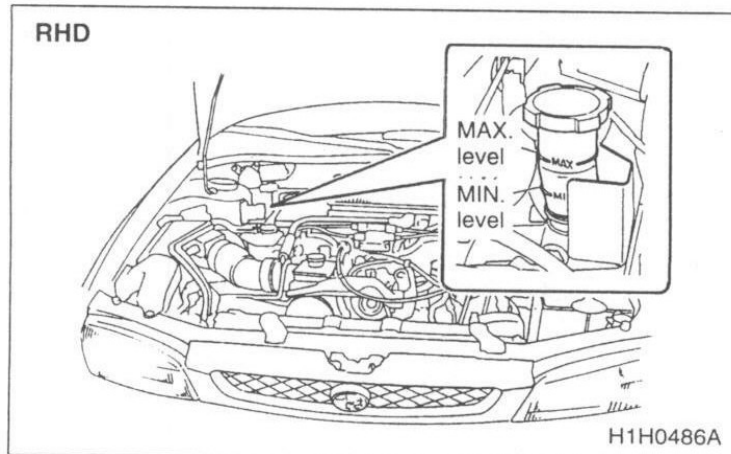
- 5) Check the fluid level using the scale on the outside of the clutch master cylinder tank. If the level is below "MIN", add clutch fluid to bring it up to "MAX".

Recommended clutch fluid:

FMVSS No. 116, fresh DOT3 or DOT4 brake fluid

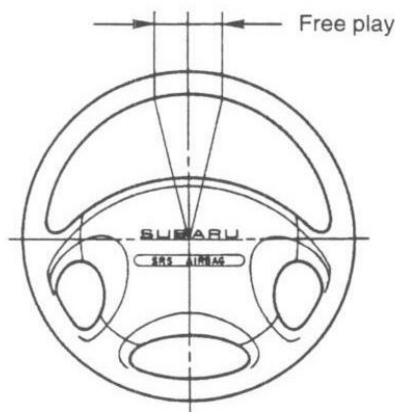
CAUTION

- Avoid mixing different brands of brake fluid to prevent degradation of the fluid.
- Be careful not to allow dirt or dust to get into the reservoir tank.
- Use fresh DOT3 or DOT4 brake fluid when refilling fluid.



17. Steering and Suspension System

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60



H1H0438

A: INSPECTION

1. STEERING WHEEL

- 1) Set steering wheel in a straight-ahead position, and check wheel spokes to make sure they are correctly set in their specified positions.
- 2) Lightly turn steering wheel to the left and right to determine the point where front wheels start to move.

Measure the distance of the movement of steering wheel at the outer periphery of wheel.

Steering wheel free play:

0 — 17 mm (0 — 0.67 in)

Move steering wheel vertically toward the shaft to ascertain if there is play in the direction.

Maximum permissible play:

0.5 mm (0.020 in)

- 3) Drive vehicle and check the following items during operation.

- (1) Steering force

The effort required for steering should be smooth and even at all points, and should not vary.

- (2) Pull to one side

Steering wheel should not be pulled to either side while driving on a level surface.

- (3) Wheel runout

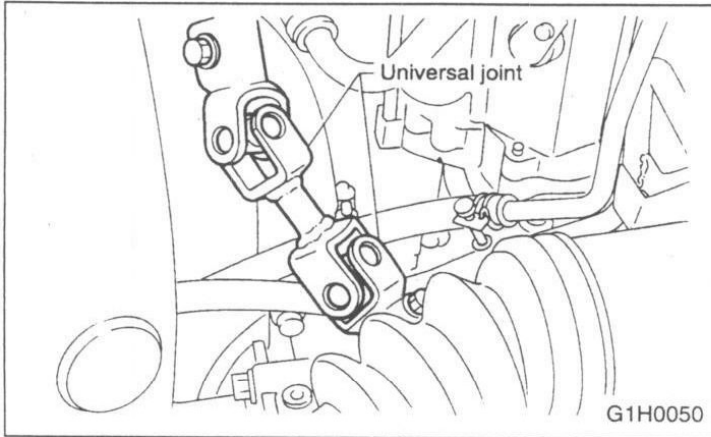
Steering wheel should not show any sign of runout.

- (4) Return factor

Steering wheel should return to its original position after it has been turned and then released.

Maximum permissible play:

0.5 mm (0.020 in)

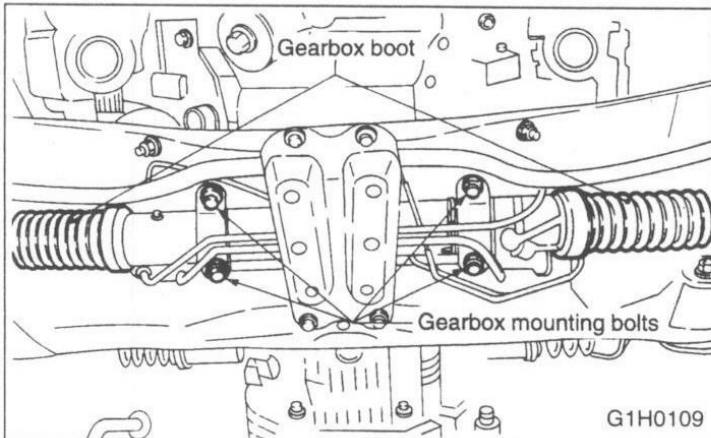


2. STEERING SHAFT JOINT

1) When steering wheel free play is excessive, disconnect universal joint of steering shaft and check it for any play and yawing torque (at the point of the crossing direction). Also inspect for any damage to sealing or worn serrations. If the joint is loose, retighten the mounting bolts to the specified torque.

Tightening torque:

$24 \pm 3 \text{ N.m}$ ($2.4 \pm 0.3 \text{ kg-m}$, $17 \pm 2.2 \text{ ft-lb}$)



3. GEARBOX

1) With wheels placed on a level surface, turn steering wheel 90° in both the left and right directions.

While wheel is being rotated, reach under vehicle and check for looseness in gearbox.

Tightening torque:

$59 \pm 12 \text{ N.m}$

$(6.0 \pm 1.2 \text{ kg-m}$, $43.5 \pm 8.5 \text{ ft-lb})$

2) Check boot for damage, cracks or deterioration.

3) With vehicle on a level surface, quickly turn steering wheel to the left and right.

While steering wheel is being rotated, check the gear backlash. If any unusual noise is noticed, adjust the gear backlash in the following manner.

(1) Tighten adjusting screw to 5 N.m (0.5 kg-m, 3.6 ft-lb) and then loosen. Repeat this operation twice.

(2) Retighten adjusting screw to 5 N.m (0.5 kg-m, 3.6 ft-lb) and back off 30°.

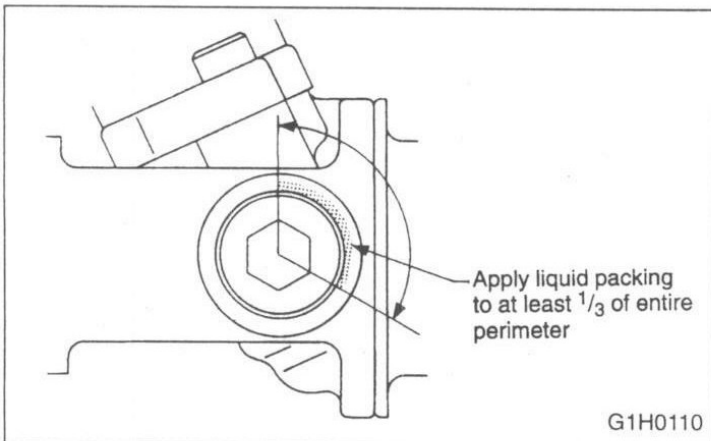
(3) Apply liquid packing to at least 1/3 of entire perimeter of adjusting screw thread.

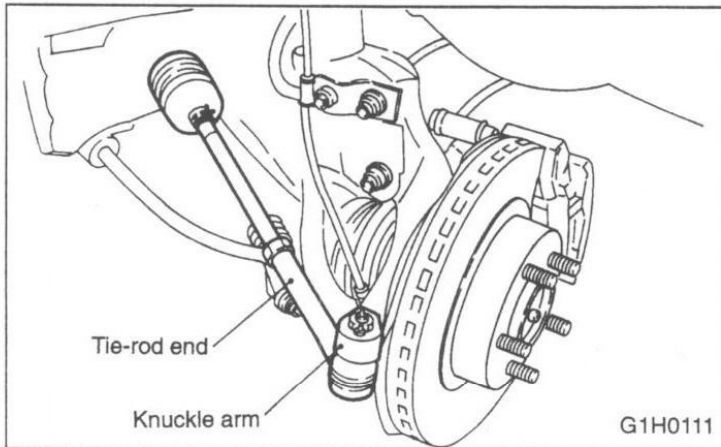
(4) Install lock nut. While holding adjusting screw with a wrench, tighten lock nut using SPANNER (926230000).

Tightening torque (Lock nut):

$39 \pm 10 \text{ N.m}$ ($4.0 \pm 1.0 \text{ kg-m}$, $29 \pm 7 \text{ ft-lb}$)

Hold the adjusting screw with a wrench to prevent it from turning while tightening the lock nut.





4. TIE-ROD

- 1) Check tie-rod and tie-rod ends for bends, scratches or other damage.
- 2) Check connections of knuckle ball joints for play, inspect for damage on dust seals, and check free play of ball studs. If castle nut is loose, retighten it to the specified torque, then tighten further up to 60° until cotter pin hole is aligned.

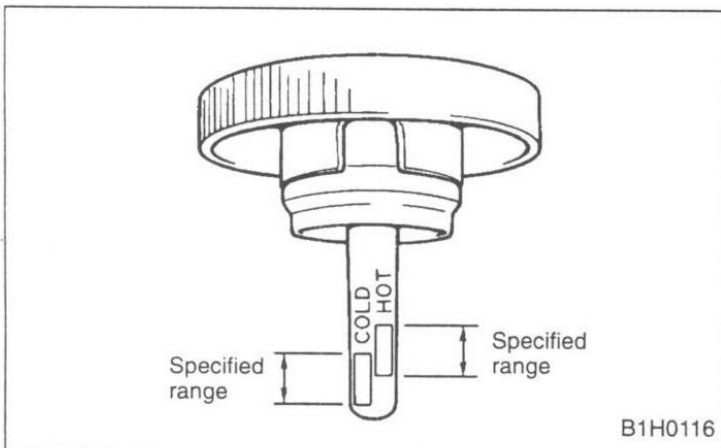
Tightening torque:

$27 \pm 2 \text{ N.m}$ ($2.75 \pm 0.75 \text{ kg-m}$, $20 \pm 2 \text{ ft-lb}$)

- 3) Check lock nut on the tie-rod end for tightness. If it is loose, retighten it to the specified torque.

Tightening torque:

$83 \pm 5 \text{ N.m}$ ($8.5 \pm 0.5 \text{ kg-m}$, $61.5 \pm 3.5 \text{ ft-lb}$)



5. POWER STEERING FLUID LEVEL

- 1) Place vehicle with engine "off" on the flat and level surface.
- 2) Check the fluid level by removing filler cap of oil pump.
 - (1) Check by "COLD" range at temperature 21°C (70°F) of fluid temperature.
 - (2) Check by "HOT" range at temperature 60°C (140°F) of fluid temperature.

3) Fluid level should be maintained in the each specified range on the indicator of filler cap. If fluid level is at lower point or below, add fluid to keep the level in the specified range of indicator.

If fluid level is at upper point or above, drain fluid to keep the level in the specified range of indicator by using a syringe or the like.

Recommended fluid	Manufacturer
"Dexron II, IIE or III" type	B.P.
	CALTEX
	CASTROL
	MOBIL
	SHELL
	TEXACO

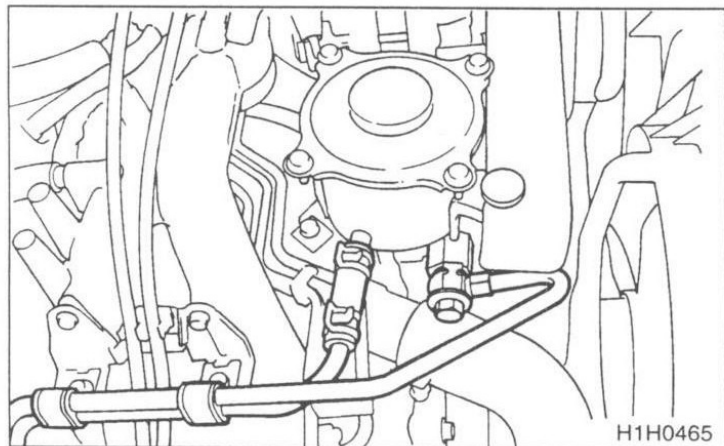
Fluid capacity:**0.7 ℓ (0.7 US qt, 0.6 Imp qt)****6. POWER STEERING FLUID FOR LEAKS**

Inspect the underside of oil pump and gearbox for power steering system, hoses, piping and their couplings for fluid leaks.

If fluid leaks are found, correct them by retightening their fitting bolts (or nuts) and/or replacing their parts.

NOTE:

- Wipe the leakage fluid off after correcting fluid leaks, or a wrong diagnosis is taken later.
- Also pay attention to clearances between hoses (or pipings) and other parts when inspecting fluid leaks.

**7. HOSES OF OIL PUMP FOR DAMAGES**

Check pressure hose and return hose of oil pump for crack, swell or damage. Replace hose with new one if necessary.

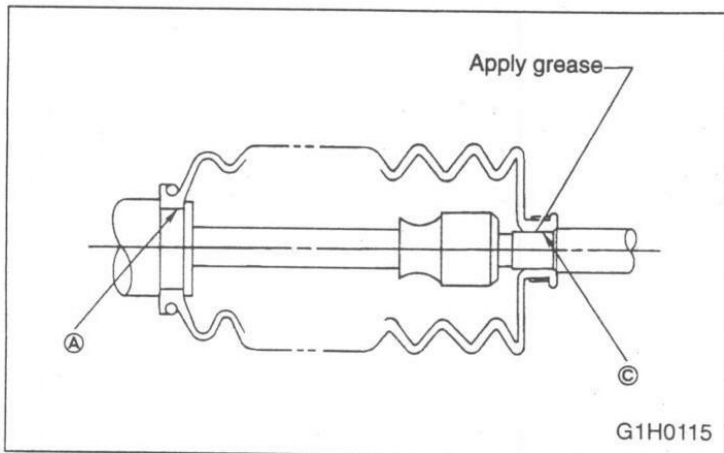
NOTE:

Prevent hoses from revolving and/or turning when installing hoses.

8. POWER STEERING PIPES FOR DAMAGE

Check power steering pipes for corrosion and damage.

Replace pipes with new one if necessary.



9. GEARBOX BOOTS

Inspect both sides of gearbox boots as follows, and correct the defects if necessary.

- 1) (A) and (C) positions of gearbox boot are fitted correspondingly in (A) and (C) grooves of gearbox and the rod.
- 2) Clips are fitted outside of (A) and (C) positions of boot.
- 3) Boot does not have crack and hole.

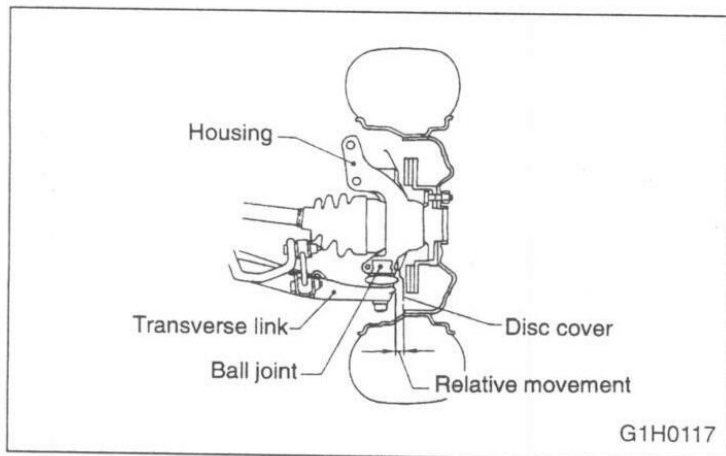
NOTE:

Rotate (C) position of gearbox boot against twist of it produced by adjustment of toe-in, etc.

10. FITTING BOLTS AND NUTS

Inspect fitting bolts and nuts of oil pump and bracket for looseness, and retighten them if necessary.

Inspect and/or retighten them when engine is cold. <Ref to 4-3 [C200].>



11. SUSPENSION SYSTEM

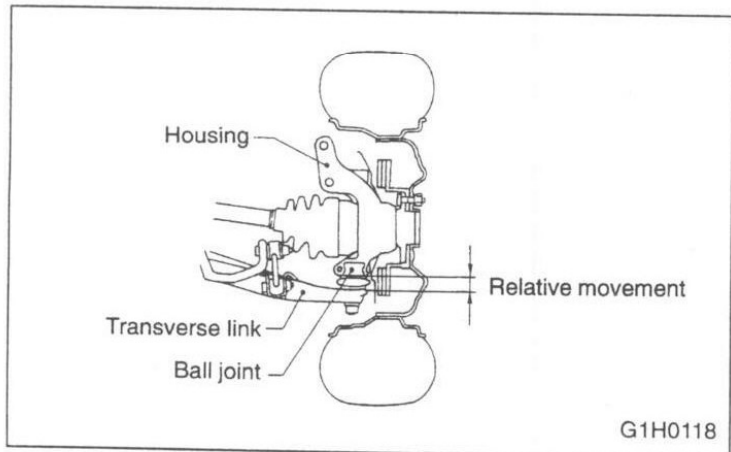
1) Play of front ball joint Inspect every 25,000 km (15,000 miles) or 12 months, whichever occurs first.

(1) Jack up vehicle until front wheels are off ground.

(2) Next, grasp bottom of tire and move it in and out. If relative movement is observed between brake disc cover and end of transverse link, ball joint may be excessively worn.

(3) Next, grasp end of transverse link and move it up and down. Relative movement between housing and transverse link boss indicates ball joint may be excessively worn.

(4) If relative movement is observed in tests (2) and (3) above, remove and inspect ball joint according to chapter 4-1. If free play exceeds standard, replace ball joint.



2) Damage of dust seal Inspect every 25,000 km (12,000 miles) or 12 months, whichever occurs first.

Visually inspect ball joint dust seal. If it is damaged, remove transverse link as instructed in chapter 4-1 and measure free play of ball joint.

(1) When looseness exceeds standard value, replace ball joint.

(2) If the dust seal is damaged, replace with the new ball joint.

NOTE:

When transverse link ball joint has been removed or replaced, check toe-in of front wheel. If front wheel toe-in is not at specified value, adjust according to chapter 4-1 so that toe-in conforms to service standard.

Transverse link's liquid-filled bushing

Check oil leaks at or around liquid-filled bushing if oil leaks replace bushing.

3) Wheel alignment and ground clearance (wheel arch height) Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first.

(1) Unload cargoes and set vehicle in curb weight (empty) condition.

(2) Then, check ground clearance (wheel arch height) of front and rear suspensions to ensure that they are within specified values.

(Adjusting procedure) — Ground clearance (wheel arch height)

When ground clearance (wheel arch height) is out of standard, visually inspect following components and replace deformed parts.

- Suspension components [Front and rear: strut assembly]

- Body parts to which suspensions are installed.

When no components are deformed, adjust ground clearance (wheel arch height) by replacing coil spring in the suspension whose ground clearance is out of standard.

(3) Check alignment of front suspension to ensure that following items conform to standard values provided in chapters 4-1 and 4-3.

- Toe-in
- Camber angle
- Caster angle
- Steering angle

(Adjusting procedure) — Front suspension alignment

(a) Caster angles are not adjustable. When caster angle does not conform to standard value, visually inspect following components and replace deformed parts.

- Suspension components [Strut assembly, crossmember, transverse link, etc.]
- Body parts to which suspensions are installed.

(b) When toe-in and camber is out of standard value, adjust by the method described in chapter 4-1 so that it conforms to service standard.

(c) When right-and-left turning angles of tire are out of standard, adjust to standard value by method described in chapter 4-3.

(4) Check alignment of rear suspension to ensure that following items are within standard values.

- Toe-in
- Camber angle

(Adjusting procedure) — Rear suspension alignment

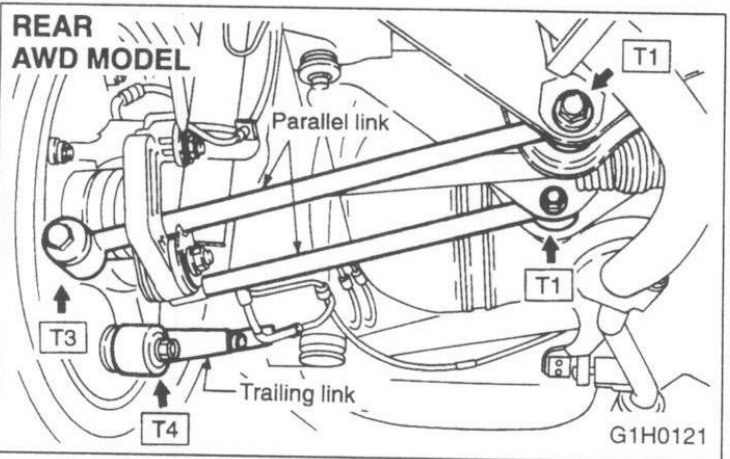
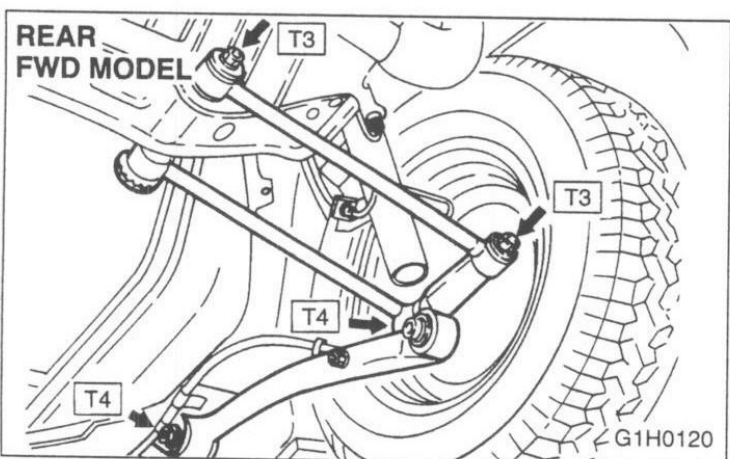
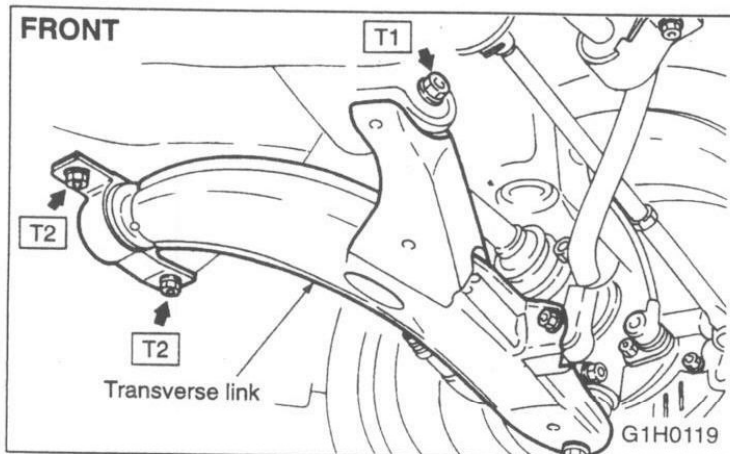
When toe or camber angle does not conform to standard value, visually inspect parts listed below. If deformation is observed, replace damaged parts.

- Suspension components [Strut assembly, lateral links, trailing link, crossmember, etc.]
- Body parts to which suspensions are installed.

When no components are deformed, adjust toe-in by the method described in chapter 4-1 so that it conforms to service standard.

4) Oil leakage of strut CP Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first.

Visually inspect strut CP for oil leakage as instructed in chapter 4-1. Replace strut if oil leaks excessively.



5) Tightness of bolts and nuts Inspect every 50,000 km (30,000 miles) or 24 months, whichever occurs first. Check bolts shown in the figure for looseness. Retighten bolts to specified torque. If self-lock nuts and bolts are removed, replace them with new ones.

Tightening torque:

- T1:** $98 \pm 15 \text{ N.m}$
 $(10 \pm 1.5 \text{ kg-m}, 72 \pm 11 \text{ ft-lb})$
- T2:** $245 \pm 49 \text{ N.m}$
 $(25 \pm 5 \text{ kg-m}, 181 \pm 36 \text{ ft-lb})$
- T3:** $139 \pm 21 \text{ N.m}$
 $(14 \pm 2 \text{ kg-m}, 101.5 \pm 14.5 \text{ ft-lb})$
- T4:** $112.5 \pm 14.5 \text{ N.m}$
 $(11.5 \pm 1.5 \text{ kg-m}, 83 \pm 11 \text{ ft-lb})$

6) Damage to suspension parts

Check the following parts and the fastening portion of the car body for deformation or excessive rusting which impairs the suspension. If necessary, replace damaged parts with new ones. If minor rust formation, pitting, etc. are noted, remove rust and apply remedial anti-corrosion measures.

(1) Front suspension

- Transverse link
- Crossmember
- Strut

(2) Rear suspension

- Crossmember
- Lateral links
- Trailing link
- Strut

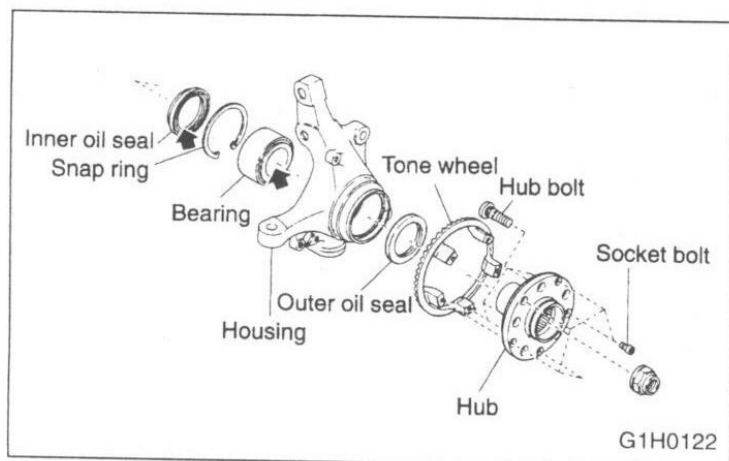
(3) In the district where salt is sprayed to melt snow on a road in winter, check suspension parts for damage caused by rust every 12 months after lapse of 60 months. Take rust prevention measure as required.

18. Front and Rear Wheel Bearing Lubricant

MAINTENANCE INTERVAL [Number of months of km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
					(I)

A: INSPECTION

Inspect the condition of front and rear wheel bearing grease.



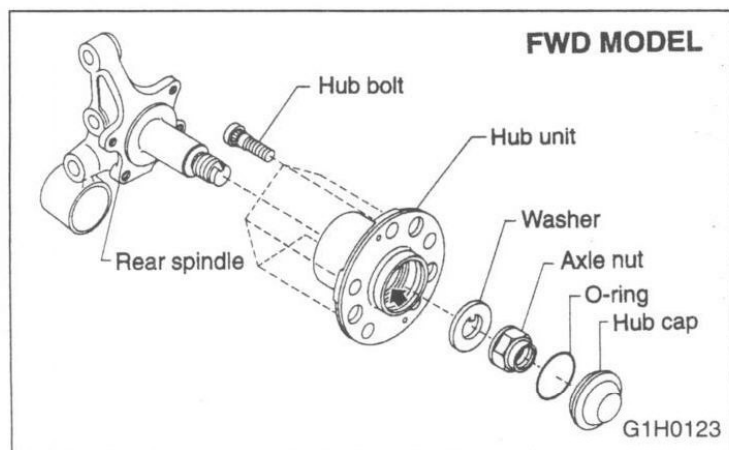
1. FRONT WHEEL BEARING

- 1) Jack up the front of vehicle.
- 2) While holding front wheel by hand, swing it in and out to check bearing free play.
- 3) Loosen wheel nuts and remove front wheel.
- 4) If bearing free play exists in step 2) above, attach a dial gauge to hub and measure axial displacement in axial direction.

Service limit:

Straight-ahead position within 0.05 mm (0.0020 in)

- 5) Remove bolts and self-locking nuts, and extract transverse link from front crossmember.
 - 6) While lightly hammering spring pin which secures D.O.J. to transmission spindle, remove it.
 - 7) Extract D.O.J. from transmission spindle.
 - 8) While supporting front drive shaft horizontally with one hand, turn hub with the other to check for noise or binding.
- If hub is noisy or binds, disassemble front axle and check condition of oil seals, bearing, etc.

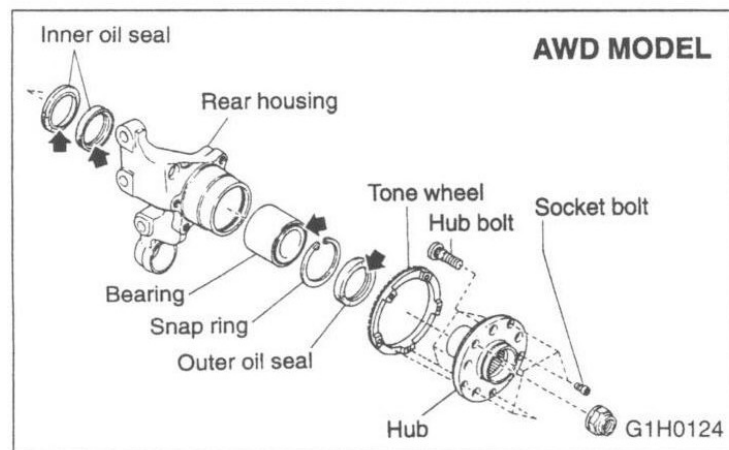


2. REAR WHEEL BEARING

- 1) Jack up the rear of vehicle.
- 2) While holding rear wheel by hand, swing it in and out to check bearing free play.
- 3) Loosen wheel nuts and remove rear wheel.
- 4) If bearing free play exists in step 2) above, attach a dial gauge to hub and measure axial displacement in axial direction.

Service limit:

Straight-ahead position within 0.05 mm (0.0020 in)



- 5) Turn hub by hand to check for noise or binding. If hub is noisy or binds, disassemble rear axle and check condition of oil seals, bearings, etc.

- 6) When the vehicle is an AWD vehicle, remove bolts and self-locking nuts, and remove front lateral link from cross member.

Remove the DOJ of rear drive shaft from rear differential.

For removal of DOJ, refer to "WHEELS AND AXELS".

While supporting rear drive shaft horizontally with one hand, turn hub with the other to check for noise or binding.

If hub is noisy or binds, disassemble rear axle and check condition of oil seals, bearings, etc.

19. Valve Clearance

MAINTENANCE INTERVAL [Number of months or km (miles) whichever occurs first]					
Months		12	24	36	48
x1,000 km	1.6	25	50	75	100
x1,000 miles	1	15	30	45	60
For Europe	Inspect every 100,000 km (60,000 miles)				
Except Europe	Inspect every 100,000 km (60,000 miles)				

A: INSPECTION

1. SOHC MODEL

For the inspection procedures of the valve clearance on SOHC models, refer to "ON-CAR SERVICE". <Ref. to 2-2 [07A1].>

2. DOHC MODEL

For the inspection procedures of the valve clearance on DOHC models, refer to "ON-CAR SERVICE". <Ref. to 2-2 [07A2].>